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The Automobile

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FOURNIER.
MADAME GOBRON.
RENÉ DE KNYFF.

GIRARDOT.
THE CONTROL AT POTSDAM.
M. FARMAN.

THE PARIS-BERLIN RACE.

The Paris-Berlin Race.

The great race from Paris to Berlin will probably be remembered for some time to come as the most memorable of European automobile races. Though it was surpassed in length by the famous six-day Tour de France of 1899—1,378 miles long—yet the truly international character of this race, including as it did the pick of German automobilism, with the unprecedented popular enthusiasm all along the route of the three countries traversed, and the prodigious number of entries, all combined to place it easily foremost among racing events.

The race itself was divided into two sections, the tourists starting on June 22 and the racers on the 27th, and both sections reaching Berlin on Saturday, the 29th. The racers, 110 in number, were started at two-minute intervals from Champigny, a suburb of Paris, beginning at 3.30 a. m. They were divided into four classes, viz., voitures, light voitures (880 to 1,430 lbs.), voiturettes (under 880 lbs.), and motocycles. Forty-one machines of eleven different makes were in the first class, including twenty Panhards and seven Mors in sizes from 20 to 28 h.p., three Mercedes of 35 h. p., two Serpollet steam cars, one a barely finished racer of 20 h.p., and others of the best known makes. Besides the French and German drivers, S. F. Edge appeared with his 50-h. p. Napier, Chas. Jarrott driving a 28-h.p. Panhard, Chas. S. Rolls with a 28-h.p. Mors, and Foxhall Keene (the only American entering) with a similar machine. Madame du Gast, the only woman in the racing section, drove a 20-h.p. Panhard. Of the Englishmen, Jarrott and Rolls covered the course, arriving eight and eighteenth respectively, while Edge's ponderous machine was crippled by tire troubles and withdrew. Foxhall Keene burst a tire and landed in a potato patch, but escaped unhurt. Madame du Gast arrived in Berlin next after Rolls, her time having been approximately 26 hours.

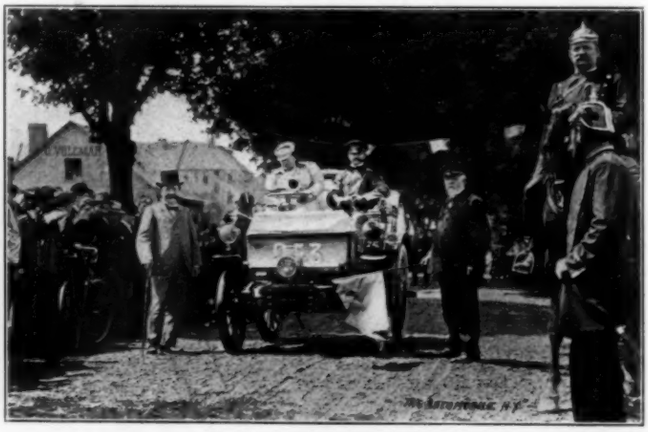
Fournier, who was started third, gained first place on Thursday just beyond Rheims, and was never passed, though for some time he was run very close by Hourgieres. Near Rheims occurred the first, and, happily, the only fatality of the race. A machine had just passed, leaving the usual impenetrable cloud of dust, when a boy ran out into the street, and, before the dust cleared, was struck by Brasier and instantly killed. Brasier was nearly overcome by the catastrophe, and was with difficulty prevailed upon by the bystanders, who saw that he was in no way to blame, to proceed.

Aix-la-Chapelle, 283 miles from Paris was the end of the first day's run. Here Fournier was the first to arrive, coming just at noon. He was followed at intervals of a few minutes by de Knyff, Girardot, Voigt, Maurice Farman, Charron and Count Boson de Perigord, in the order named. Others kept steadily coming in, and before the closing of the control sixty out of the 110 starters had been registered. An enormous crowd witnessed the arrivals, and so reckless was it of danger that the police had the utmost difficulty in keeping the road clear.

Beyond Aix-la-Chapelle the perfect French highways were succeeded by alternate good and bad macadam, with holes now and then, and after passing Hanover by dust so thick as to be almost suffocating, and rendering the passage of one car by another an operation of considerable delicacy and some danger. Accidents to springs and tires were frequent, and compelled the withdrawal of several competitors. From Cologne to Hanover, the end of the second day's run, the lead was hotly contested between Fournier and Girardot, with Voigt, Farman and de Knyff close behind. Hourgieres had buckled a wheel and was losing ground, while Antony, who rode Levegh's Mors, was running a phenomenal race and threatening to distance even Fournier.

At Hanover the order of the leaders was: Fournier, de Knyff, Antony, Girardot, M. Farman. Considering that Antony was among the last to start from Paris, his racing time was thought to be less than Fournier's; but on Saturday he met with so many accidents that he had to withdraw. Foxhall Keene was another who, despite his mischance on Thursday, managed to continue, though he did not show up among the racers at Berlin. The only serious accident Saturday befel a Mercedes car driven by Degrais. The latter, accompanied by Count Schwiter, an Austrian sportsman who had asked to serve as his mechanic, was closely following another car, when the former took a sharp turn in the road. Degrais, not seeing the turn for the dust, drove straight ahead and crashed into a tree. He himself escaped with slight injuries, but the Count had his arms and legs broken and suffered a had scalp wound besides. Near Spandau, Farman ran into a car which was being driven in the road by a local motorist. Both cars were smashed, but the drivers were unhurt, and Farman rode into Berlin on Charron's machine.

THE FIRST RACER ENTERING LEIPSIC.



MADAME GOBRON AT FRANKFORT, TOURIST SECTION.

The finish of the great race was at the race course in Berlin. As everywhere, the crowd was enormous, though it was less demonstrative than a French crowd, and soldiers of the Kaiser kept the curious out of harm's way by linking hands in two long rows on both sides of the course. Fournier arrived first just before noon, and was greeted with a tremendous ovation. Coated as he was with dust, he was carried on the shoulders of his admirers to the controller's stand, where he "signed on" for the last time. Half an hour later Girardot came in, then Brazier, de Knyff, and Farman with Charron on board. At 1.20 came Louis Renault, winning the voiturette class in the remarkable time of 19 hours 31 minutes, less than 3½ hours slower than Fournier; and Giraud, winner in the light voiture class, was not long after.

Following is the classification, with the times through neutralized towns deducted:

CLASS A.—HEAVY VOITURES.

No.	Owner.	HP.	Make.	Tot'l time h.	m.
1.	Fournier	28	Mors	16	5
2.	Girardot	28	Panhard	17	7
3.	R. de Knyff	28	Panhard	17	11
4.	Brasier	28	Mors	17	42
5.	H. Farman	28	Panhard	18	21
6.	Charron	28	"	18	51
7.	Axt	24	"	18	58
8.	C. Jarrott	28	"	19	34
9.	P. Chauchard	28	"	19	36
10.	Gilles Hourgières	28	Mors	19	38
11.	E. Heath	28	Panhard	19	43
12.	Voigt	28	"	20	39
13.	Leya	28	"	21	28
14.	Werner	35	Mercedes	22	1
15.	Van der Heyden	24	Panhard	22	7
16.	Clément	28	"	22	21
17.	Lemaitre	35	Mercedes	23	20
18.	Rolls	28	Mors	24	1
19.	Mme. du Gast	20	Panhard	26	1
20.	Brillié	10	Nancéenne	29	20
21.	J. de Crawhez	16	Pipe	29	33
22.	de Turckheim	11	Amédée Bollée	39	41

CLASS B—LIGHT VOITURES.

No.	Owner.	HP.	Make.	Tot'l time h.	m.
1.	Giraud	12	Panhard	19	51
2.	Teste	12	"	22	34
3.	Berteaux	12	"	22	35
4.	Sincholle	14	Darracq	22	46
5.	Edmond	20	"	23	32
6.	Kraeutler	8	Pengeot	25	6
7.	Roland	8	Gobron-Brillié	25	12
8.	J. Gondoin	12	Panhard	25	46
9.	Mercy	18	Gladiator	25	49
10.	Dernier	8	Gobron-Brillié	27	46
11.	Haban	10	Ste. Nesseldorf	31	7
12.	Collin	24	Sirene	33	38
13.	Rigolly	12	Gobron-Brillié	35	58
14.	Peschard	16	Pieper	37	59
15.	Turgan	8	TurganFoy	38	49

CLASS C—VOITURETTES.

No.	Owner.	HP.	Make.	Tot'l time h.	m.
1.	Louis Renault	7	Renault	19	31
2.	Grüs	7	"	22	58
3.	L. Morin	6	Corre	29	7
4.	Merville	6	Renault	34	31
5.	Lamy	6	"	35	40
6.	Delisle	6	Darracq	37	29

CLASS D—MOTOCYCLES.

No.	Owner.	HP.	Make.	Tot'l time h.	m.
1.	Osmont	7	De Dion	19	15
2.	Bardeau	7	"	21	4
3.	Cormier	7	"	22	23
4.	Bardin	7	"	22	38

Fournier wins the Kaiser's Cup, the prizes of the Grand Duke of Luxembourg and of the City of Hanover, besides the gift of the machine which he drove, and "pickings" from manufacturers of tires, etc., reported to reach $15,000. Maurice Farman wins King Leopold's Cup for the best time to the Belgian frontier. Giraud wins the prize of the Grand Duke of Mecklenburg. Werner wins the Sèvres Vase of President Loubet for the first German car. L. Renault wins the prize offered by M. Pierre Baudin.

The best average speed for the whole race are as follows:

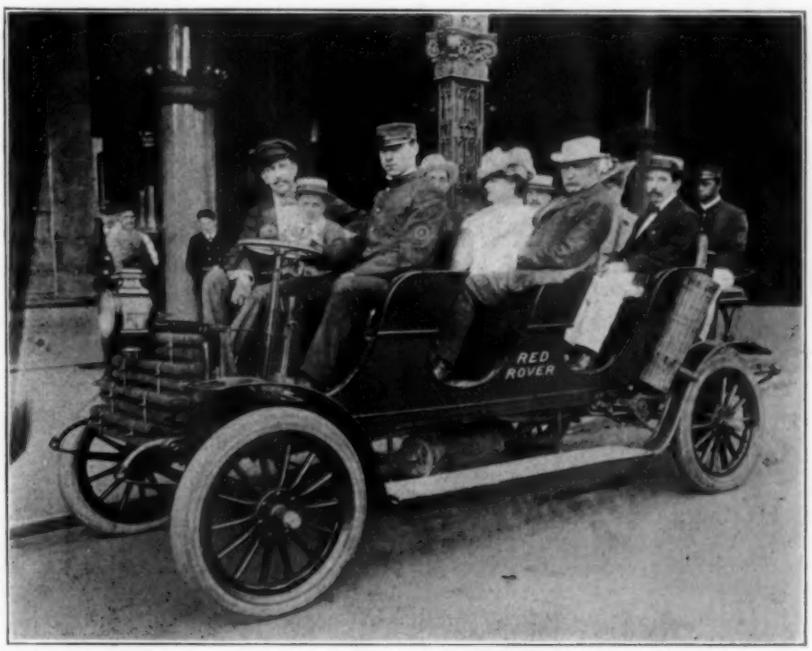
	Hrs.	Mins.	Miles per hour.
Fournier	16	5	44.12
Girardot	17	7	43.40
R. de Knyff	17	11	43.24
Brasier	17	42	41.97
H. Farman	18	21	40.49
Charron	18	51	39.41
Axt	18	58	39.08
Osmont	19	15	38.59
L. Renault	19	31	38.07
Jarrott	19	34	37.97
Chauchard	19	36	37.90
Hourgières	19	38	37.86
Heath	19	43	37.68
Giraud	19	51	37.43

The run of the tourists' section was more of an excursion than a race. It was chiefly notable for the small number of accidents and the large number of vehicles included in the official finish, these being 41 out of 54 starters. The tourists were received with great cordiality all along the route.

The "Red Rover."

This machine, which in the last few weeks has become a familiar sight on the streets of New York, is operated by the Automobile Touring Co., of New York, as an excursion conveyance. It makes daily trips from the Waldorf-Astoria hotel to the various points of interest in Westchester county and on Long Island, and under the experienced management of Louie J. Harris it has proved very popular.

It was built by the Automobile Co. of America, makers of the "Gasomobile," and it has a number of features in common with that machine. The standard triple-cylinder 10-HP. motor is used, changed only by having an extra heavy flywheel, and by the addition of a large oil reservoir on the crank case, which lubricates the rod ends and main shaft bearings through sight feeds. The surplus oil, being splashed into the cylinders, lubricates the pistons.



THE "RED ROVER" AT THE WALDORF.

The transmission gear comprises two forward speeds and a reverse, but in place of the individual clutches of the standard "Gasomobile" there is a single clutch on the engine shaft, normally engaged by a spring and released by pressure on a pedal which also applies a brake on the countershaft. The speed changes are by sliding gears which are shifted by a hand lever when the clutch is released, and the countershaft contains the differential and drives the rear wheels by separate chains. Emergency brake bands act on the rear wheels. Steering is by wheel, a steep-pitch screw at the lower end of the wheel shaft actuating a nut connected with the stub axles by a bell crank and links. A 20-gallon gasoline tank is under the front seat, with a flat water tank beneath it.

The speed of the machine is about 18 miles an hour, and it runs with remarkable smoothness. The main difficulty with it has been to find tires which would endure the heavy load.

Public Automobiles in New York City.

The Fifth Avenue Stage Co., which is now the property of the New York Electric Vehicle Transportation Co., has recently secured legislation permitting it to extend its routes without the formality of a franchise, and it is now announced that new routes will shortly be started as follows:

From Eighty-ninth street up Fifth avenue to 120th street, west in 120th street to Mount Morris Park to 124th street, to Fifth avenue, to 135th street.

Also from Fifth avenue through Fifty-seventh street to Broadway, to West Seventy-second street, to Central Park West.

Also from Fifth avenue and 110th street to Cathedral Parkway, to Riverside Drive.

Also from Broadway west in Seventy-second street to Riverside Drive, to West 124th street.

Also from 110th street and Seventh avenue to 153d street, west to Macomb's Dam Bridge road, to 155th street.

Also from 122d street and Riverside Drive north to 135th street and east in 135th street to the Boulevard.

The vehicles to be placed on these routes, it is announced, will be electrically propelled, and at the same time electric stages will gradually replace the horse vehicles now in operation on Fifth Ave. It is expected that some of the new vehicles will be ready for use by next October.

The Automobile Club of Great Britain and Ireland is considering the adoption of the rule recently enacted by the Automobile Club of France, restricting the weight of all future road racers to not exceeding 900 kilograms or 2,000 pounds.

Steam and Gasoline Vehicles Compared.

By Earl P. Mason.

II. The Gasoline Carriage.

In the first article of this series the writer endeavored to state some of the advantages and disadvantages of the steam automobile.

The present article will endeavor to analyze the carriage driven by the internal combustion engine.

To follow the same methods as used in the article of last month, we will first name the essential parts of the carriage and will then take up each part separately and in detail.

The essential parts of the internal combustion machine, or gasoline automobile, as we shall call it, gasoline being the fuel most commonly used, are as follows: Running gear, body, engine, fuel tank, water tank and transmission mechanism. The engine may be subdivided into engine proper, ignition mechanism and mixing or carburetting device.

Very little space need be devoted to the first two—running gear and body—as they are common to all other types of autos as well. It is, however, usual to make the running gear of gasoline machines slightly heavier than is necessary on steam automobiles, on account of the greater vibration and severe shocks that are brought on it by the heavier working parts of the gasoline engine.

As the engine with its accessories is the most important part of this type of ma- up first the other parts of the machine.
up first the other parts of he machine.

On account of the greater economy of the gasoline machine over the steam, it is not necessary to make the fuel tank as large on the former for the same radius of action. It is, however, customary to make this tank of about equal size on the two types of machines, and thus increase the radius of action of the gasoline machine over the steam in the proportion of about four to one for equal power and weight. It will thus be seen that the gasoline machine has a great advantage over the steam in cost of running and eliminating the bother of obtaining fuel so often.

The danger of fire or explosion of the fuel tank on the gasoline machine has been reduced to a minimum, or one might almost say eliminated altogether, by having no gasoline under pressure and no naked flame. The gasoline usually flows to the vaporizing or carburetting device by gravity, rendering pressure unnecessary.

Fire or explosion on a gasoline machine can then only be caused by gross carelessness on the part of the operator.

The water tank is common to both types of machines, with the exception of the small sizes of gasoline engines, which can be cooled by radiation. With the larger sizes of gasoline machines it has been found impossible to obtain enough radiating surface to keep the cylinder cool, owing to the fact that the radiating surfaces of two cylinders of equal stroke, but different diameters, are to each other as their diameters, whereas the heat-producing powers of the two are as the squares of the diameters. It can therefore readily be seen that we soon arrive at a point with the air-cooled motors where the cylinder would get so hot that the fuel would be ignited on admission instead of waiting to be compressed and exploded at the right moment. The motor would then lose its power.

For these reasons it is customary to make the cylinders of all but the smallest sizes of gasoline motors water-jacketed. The water is usually kept circulating from the tank through the water jacket and to some form of radiating device, to cool it, and thence back to the tank to be used over again. In this manner the water can be used over indefinitely, the supply being replenished only occasionally to make up for leaks and some evaporation, which are inevitable.

The radiating device usually used is a coil of small flanged pipe placed either under the machine or in front of the dash, where the air can impinge upon it most readily.

There are two serious objections to this water jacketing; they are, first, the danger of some water leaking into the cylinder due to bad gaskets at the joints, and, second, the danger of the water freezing in the jacket in winter when the machine is standing still.

To those who have had experience with water in the cylinder, I need say nothing, but to the novice I may explain that a very small amount of water, not much more than a teaspoonful, in the cylinder or closed crank case will make the motor run very irregularly, if it does not stop it altogether. For this reason it is advisable to have a pet-cock in the bottom of the crank case, where accumulated water and oil may be drawn out. Water in the crank case is not, however, always an indication of a leak in the water jacket, especially on two-cycle motors, where the air and gasoline are mixed in the crank case, for the rapid vaporizing of gasoline produces cold, and if the air is moist upon entering some of the moisture will be condensed in the crank chamber.

The freezing of water in the jacket would be very liable to crack the cylinder; therefore, great care must be taken to drain this out in cold weather.

Anti-freezing compounds, such as common salt and chloride of calcium, have been dissolved in the water, but one must be careful about using anything that will have corrosive action on the iron of the cylinder or that will leave a sediment in the passages and so obstruct the same. Glycerine has been used and found to act very well. It is readily soluble in water, and has no corrosive action on the metal; and as the water evaporates the glycerine is left behind, so that one charge of glycerine will last for several fillings of the water tank.

We now come to the transmission mechanism, which, for reasons to be explained, is much more complicated on the gasoline than on the steam vehicle.

Most gas engines used on automobiles are of the Otto, or so-called four-cycle type, though a few makers are experimenting with the Day or so-called two-cycle type. This latter the author believes will be the engine of the future, for small powers at least, owing to its great simplicity—due to absence of the troublesome admission and exhaust valves—and also to its being so much smaller and lighter for the same power than the Otto type of engine.

With either of these types of engines there are from one to three strokes when the engine is not giving out any work, and when, in fact, it must draw upon a reserve supply of energy to complete its cycle of operations. It is, therefore, necessary to have some reservoir of energy which will receive and store the work given out by the stroke of the engine and will deliver the same to the carriage and the engine through the non-working strokes.

On the steam carriage the reservoir of energy is the boiler, in the gasoline automobile it is the flywheel.

There are now two ways that we can make the flywheel effective as a reservoir of energy; it may be made very large and massive and turn slowly, or it may be made smaller and turn very rapidly. In either case the faster it turns the more energy is stored in it. There are serious objections to having a large and massive flywheel, most of which are too obvious to need mention. Suffice it to say that the weight and room it would take up would be out of the question on an automobile. Again, as revolutions are a direct factor in the power of an engine, it follows that the slower the speed of the engine the larger must be the size of the cylinder to develop a given horsepower.

On the steam automobile, if we have occasion, as, for instance, in climbing hills, to make an extraordinary draft upon our reservoir of surplus energy, we turn on more flame to make up for it and at the same time open the throttle wider, which permits greater pressure to act upon the pistons of the engine. This same thing can be done to a slight extent on gasoline autos by throttling the amount of explosive mixture that is admitted to the cylinder; but owing to the idle strokes of the gas engine and also to the peculiar action of the gases in the cylinder, this throttling can only be done to a limited extent. It is, therefore, necessary to find some other method of increasing the hill-climbing power and speed regulation than is used with the

steam engine. The way this is done is by reducing the speed of the carriage, but keeping the revolutions of the engine as near constant as possible. To accomplish this a train of gearing is placed between the engine and the rear wheels, arranged with suitable clutches so that the speed of the carriage can be varied with the changes of gears and the speed of engine and flywheel can remain constant. Thus speed is changed into tractive force.

This train of gearing is what is called the transmission gears.

These are arranged in a variety of different ways, and to give a variety of speeds, and the reverse mechanism is generally incorporated in the transmission gearing; for, the gas engine not being a self-starting engine, it would be impracticable to stop and start the engine every time that it was desired to run the carriage backward. The usual arrangement of the transmission gears is to have two speeds forward and one backward; though on some carriages there are three or more speeds forward.

Tnis transmission gearing is more or less of a nuisance, as it is rather complicated and noisy. The noise is reduced and in some cases eliminated by the use of skew or herringbone gears or by rawhide pinions where possible; it is also customary to arrange the gearing so that in the full speed ahead position the whole train of gears is clamped together and turns as a solid shaft, no gears revolving on each other.

(Concluded in next issue.)

The Smallest Electric Carriage in the World.

One of the daintiest novelties to be seen at the Pan-American Exposition is a miniature electric victoria belonging to Chiquita, the Cuban midget, and built by the Jenkins Automobile Co., of Washington, D. C. It is not merely a working model, but a working vehicle, said to be capable of a sustained speed of ten miles per hour for many hours, and complete in its equipment down to the tiny gong and the controller. Its total weight is but 95 lbs., and its wheels are but twelve inches in diameter. The seat is 15 inches wide and 14 inches from the ground. To have the driver in keeping with the vehicle, Chiquita's manager, Frank C. Bostock, has trained a negro dwarf to operate the machine.

As every part of the vehicle, down to the very lamps, had to be especially made, it is evident that the cost was considerable. Special flasks, for example, had to be made by the Diamond Rubber Co. to vulcanize the tires, while the parts of the steering gear were forged on a bench forge made for the purpose.

A number of Bridgeport enthusiasts are arranging to visit the Pan-American Exposition in September, on the occasion of the A. C. A. Buffalo runs.

Two Years' Experience with a Gasoline Carriage.

By Campbell M. Chittenden.

Two years ago, when I bought my Winton, I knew almost nothing about machinery, my only experience having been with a bicycle. I did know enough about electricity to put up a door-bell, but beyond that, practically nothing. I went up to Cleveland when I was notified that my carriage was ready, and, after driving it around the city streets for a day or two with an instructor, started one morning accompanied by a man from the factory to drive it overland to my home, a distance of about one hundred and eighty miles. We had not proceeded ten miles before I steered the carriage right off the road over a sharp two-foot bank into a ditch. We managed to back out after some trouble and then for the first time I was glad that I had bought a heavy substantial machine, for it was not injured by the fall at all. The next thing that attracted my attention was the flattening of one of the rear tires. There was no apparent puncture, but it seemed to be leaking around the lugs. We inflated it several times but it would not stand up, and we came the rest of the way, about one hundred and fifty miles with a flat tire. Of course it was ruined when we arrived and I sent it back to the factory at Hartford with a statement of the circumstances under which it had given out, and they very kindly sent me another free of charge. I have had very few punctures and always found them easy to repair with a common bicycle rubber band and cement repair outfit. I have travelled nearly seven thousand miles in all, a large part of it over bad country roads, and so far have bought only two tires, both for the rear wheels. I still use the original front tires and they seem good for many thousand miles more. One of them began to leak badly in a general sort of way, at one time, but I effectually cured it by pumping in some "Neverleak" tire preparation. It holds the air as well as ever now.

THE SMALLEST ELECTRIC CARRIAGE IN THE WORLD.

A great annoyance to me at first was caused by a rattling reach rod. I tightened up the bolt that held it repeatedly, but it always worked loose again, and I finally took a thin piece of metal about six inches long and cut a hole in one end of it the shape and size of the bolt head. That end I placed on the bolt after first tightening it, and then fastened the other end to the reach with wire; a simple expedient, but it cured a rattle which they had tried unsuccessfully to cure at the factory. I have had a few broken balls in my front bearings, but their breakage was due to my bungling in getting the bearings either too tight or too loose. My advice about them would be to leave them alone as much as possible and make other people do so too. This advice might apply to the whole machine, for I believe I have had more trouble due to "monkeying" than to any other cause. For instance, I have several times had my engine running fairly well and thought that I might improve it by altering the mixture. The usual consequence was that the thing would not run at all, and I would have to spend hours getting the valve back to its original position. Sometimes I have flooded my carbureter, because the little relief hole in the bottom was stopped up by dirt, and have wasted lots of time finding out what the trouble was. Now I always poke a wire through it at the first sign of trouble. A repair man, who was putting on a tire for me, found the little hole one day and I arrived on the scene just in time to prevent his soldering it up. He could not understand why there should be a nail hole in the bottom of what was apparently a tank.

Once, just as I was leaving the city on a four days' trip, the motor began to race furiously. I thought it might be a temporary aberration and ran along for a while, controlling the speed after a fashion by turning on and off the spark. But the cylinder soon got so hot that it would explode the charge without any spark at all, and the only way I could stop it was by turning off the gasoline. I sought for the point of trouble and found that the air pipe between the pump and the foot control-valve was broken, thereby allowing the engine to get a full charge every time. I did not want to go back, so I placed the broken ends of the pipe together and fastened them with a little piece of wood and a strip of tin, plastering the joint with mud. It worked beautifully, and I completed the rest of my trip, one of the worst I have ever made, without further trouble from that source. I say from that source, because I did have trouble with the engine missing fire, and searched for

two or three hours before I found that the little set screw on the rocker arm of the igniter was loose; a small matter, but nearly all the most exasperating troubles are caused by troubles just as small, due to the carelessness of the operator.

In ninety-nine cases out of a hundred, the reason a gasoline engine runs badly is because the sparking is deficient. A wire will break or a rod in the battery be eaten through or a connection get loose; something of that sort is the first thing to look for. Sometimes a spark will be given, but it will not be hot enough. To avoid being fooled that way, I bought a little pocket voltmeter, which I find very useful. Once I replaced a sparking point and put the new one in upside down. That caused missing until it was rectified. An ingenious friend of mine showed me a way to tell whether a spark was passing between the points at the proper intervals; while the engine was running or somebody was turning it over, he would hold a key or piece of iron against the end of the spark coil, and when circuit was made the coil would attract the key by magnetism and release it when the circuit was broken and a spark jumped properly. This plan has often saved me the trouble of taking out my sparking plug. When I do have to take it out to dress down the points, I find it much easier after taking off the nuts to blow it out by putting the engine on compression, than to pry and haul at it with pincers and screw driver. My batteries have needed renewing about every three thousand miles and I am about to put on a magneto generator with a mechanical governor. I shall continue to carry the batteries but shall use them only in case of trouble with the generator.

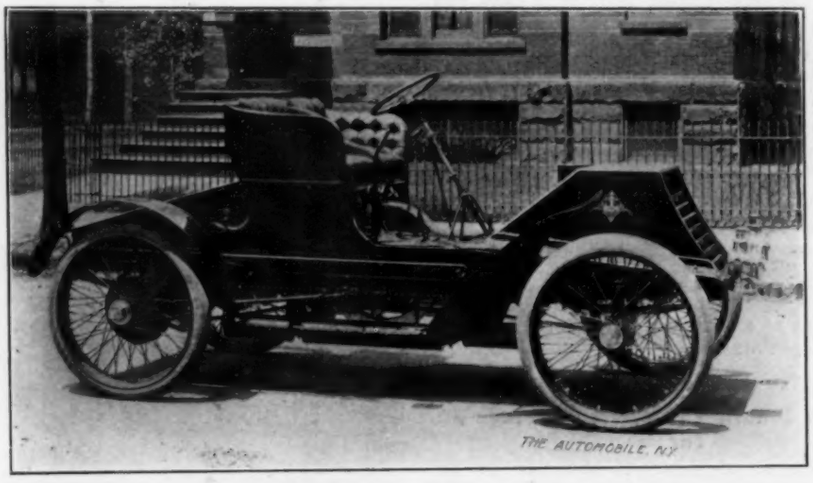
One thing which I notice some drivers neglect and which seem to me of supreme importance, is the keeping of the friction clutches tight. I once thought I might have to travel forty or fifty miles on the low gear because I had let my high clutch slip until I could just barely get it to hold. Once or twice I had to take off my eccentric strap and file the ends a little to make it tighter—a very simple task.

I keep my carriage in a simple shed made of one-inch plank, measuring about twelve feet square and provided with a pit under the carriage, which is a great convenience sometimes. Until recently I had no artificial heat in the shed and one cold night when I had neglected to draw off my cooling water, it froze and bulged the sides of the jacket until the air-pump plunger rubbed against one side and caused a leak. It was in such a place that we could not get at it with a soldering iron unless we dismounted all the mechanism. So I put some corn-meal—about a handful—in the tank, filled it up with water and ran it until the water nearly boiled. The leak, from which the water had been coming in almost a stream, was effectually stopped and has given me no trouble since. For use in very cold weather I had a cover made for the rear end, which buttons over the wire netting, and I have let the carriage stand outside for hours in zero weather without freezing. I also had a frame of glass made which hangs on leather straps from the top of the front bow of my storm top and fills up the opening down to the rubber apron. This is a great comfort in cold or stormy weather. When not in use it swings up over my head against the inside of the top where it is held by a strap on a nail, and in summer I take it out altogether. In use it makes the carriage a very good substitute for a hansom.

Last winter, to avoid the trouble of letting the water out whenever I left the carriage in the barn, I had a gas pipe run from my house to the side of the pit and thence an arm swinging up and down with a large gas tip on the end of it, so that the flame would come under the center of the carriage about the level of the floor, though it still could be shoved up or down out of the way if I wanted to use the pit. This will keep the water from freezing in any sort of weather for any length of time, if used in connection with the cover over the wire top at the back.

I had a chain break with me once when I knew it was about worn out, but I was provided with a new link so that it was not a very difficult thing to repair. Beside the ordinary tools I think every chauffeur should carry a few chain links, some extra lubricating oil and some medium sized copper wire. I have been surprised to find how much oil some people use; I count on using no more than a dollar's worth, that is five gallons, of Standard gas engine oil in three thousand miles. I use it for all lubricating purposes and find it thoroughly satisfactory. I must confess though that through ignorance, I neglected to oil my exhaust-valve stem for eighteen months and consequently it stuck and I had to be ignominiously hauled home, for the second time in my career. The first time, I went around a curve on a slimy asphalt street too fast and skidded into the curb or something, buckling a rear wheel. As for the exhaust valve, we took it out to oil it, but the makers have since told me it can be oiled by placing the squirt in a slot next the set-screw in the forward end of the guide.

In conclusion, I should like to say that when I first got my automobile it was the only one in this part of the country and I had to learn it as I would a new language in a foreign land. There was no one here to help me and when I was in doubt about anything, I used to write my troubles to the home factory. They were always extremely kind and courteous, seemed to understand just what was the matter, and told me what to do so clearly that I scarcely ever had to write twice. Although I have never spared my carriage, and use it almost more in bad weather than in good, it is still thoroughly serviceable and as speedy as ever.



THE WINTON 40-HORSE POWER RACER.

The Winton 40-HP. Racer.

The accompanying illustration shows one of the new Winton 40-HP. racers, which, in the hands of Albert C. Bostwick and Larz Anderson, have recently made some striking records on the track.

These machines have engines with two horizontal opposed cylinders and opposite cranks, and running from 150 to 1,100 revolutions per minute. The Winton pneumatic control is used, but with an extra hand valve to regulate the engine speed to any desired point when running light. The regular contact spark is used, but its time is adjustable from the seat. Another handle near the seat opens a vent from the exhaust pipe directly into the air.

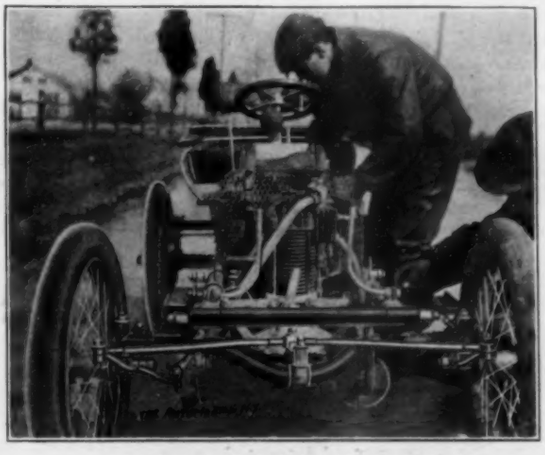
The usual Winton transmission is used, with two forward speeds and reverse, and controlled by the usual two levers at the operator's side. A handle on the steering column, however, allows of direct driving from the engine to the axle on the high speed. After passing through the cooling

coil at the front of the body, the air is deflected downward and helps to cool the motor. A centrifugal pump, gear-driven, maintains the circulation.

The photograph shows the machine in racing form. For touring a four-passenger tonneau is added behind. The wheels are 36-in., with 4-in. tires, and the wheel base is 8 feet. Ready for touring, the total weight is said to be 2,600 lbs., and with the tonneau removed the maximum speed is claimed to be 83 miles an hour.

The De Dion-Bouton 10-HP. Racer.

This machine, which was driven by C. G. Wridgway in the Long Island Automobile Club's endurance test, is one of the most recent productions of De Dion, Bouton, et Cie, Puteaux. It is intended strictly for racing purposes on smooth roads, and under such conditions it is said to attain a speed of 50 miles an hour. It has no body, properly speaking, but only a single seat for the driver, with a tool box under the seat. The front end of the frame rests on longitudinal side springs, and carries a twin-cylinder air-cooled motor with cranks at 180° and an aluminum crank case. This motor is of cylinder dimensions 84 by 90 mm., or 3.35 by 3.5 inches, and is said to develop 10 HP. at a road speed of 50 miles. The 2 to 1 shaft lies just above and at right angles to the crank shaft, from which it is driven by spiral pinions, and at its left end it carries a spur pinion meshing with two other pinions, one for each cylinder. These pinions carry the exhaust and trembler cams. From the motor a shaft runs back to the transmission gear case, in which are three changes of speed by sliding gears, and a bevel pinion and gear drive the differential on the rear axle. The rear end of the frame rests directly on the axle without springs, these probably being considered unnecessary for smooth roads.



THE DE DION-BOUTON 10-HP. RACER.

Two brakes are supplied, one on the longitudinal shaft, worked by a pedal under the left foot, and the other of two bands, one on each rear wheel hub, worked by the forward motion of a lever at the driver's left. A pedal under the right foot varies the lift of the exhaust valve, and by this means the machine can be run at a moderate speed without overheating the motor. Steering is by hand wheel, with ignition and carburation controllers grouped on the steering post. The tires are Michelin-Dunlop, 700 by 90 mm., or 27.3 by 3.5 inches, and in the high gear the motor shaft makes three turns to one of the rear wheels. From this it may be calculated that at a 50-mile speed the motor makes 1,940 turns per minute, with a piston speed of 1,130 feet. Assuming 10 B. H. P. at this speed, we get the following formula for the power of one cylinder:

$$\text{B.H.P.} = 5 = \frac{D^2 \times L \times N}{15{,}235} = \frac{3.35^2 \times 3.5 \times 1{,}940}{15{,}235}.$$

As 18,000 may be considered a good average figure for the denominator, this indicates a very high efficiency. The gasoline tank, carried back of the seat, holds 10 gallons, and the total weight, with tank filled, is given as 700 pounds.

The Robinson 18-HP. Touring Car.

A new touring car, in which American details are combined with French outlines, is shown in the accompanying illustration. The running gear is of the modern French type, with a channel iron main frame carrying all the machinery, and with the axles unconnected by reaches. The front springs are semielliptic, but elliptic rear springs are used for greater ease of riding on rough roads. The motor, having four vertical cylinders of 4 inches bore by 6 inches stroke, is under the bonnet in front. The speed-changing gear is of the Upton or planetary type, giving two forward speeds and one reverse, and a countershaft containing the differential drives the rear wheels by independent sprocket chains. The wheels are 34 inches in diameter, with 4-inch tires.

THE ROBINSON 18-HP. TOURING CAR.

Instead of using a float feed, the gasoline is pumped into an overflow cup on the dash, the surplus returning by a separate pipe to the tank. Separate vaporizers are used for the four cylinders. A rotary or gear pump maintains the circulation, and the cooling coils are in front of the bonnet. The water tank, which itself is pierced with air tubes, holds five gallons, and the gasoline tank contains 15. Both tanks are below the body at the rear. The motor speed is controlled by throttle and by varying the time of ignition, which is by primary spark.

The rear of the body may be used for luggage or tonneau seats may be fitted. As the car has only two speed changes by gearing, it is not intended for racing, its normal maximum speed being between 25 and 30 miles. The John T. Robinson Co., Hyde Park, Mass., is the maker.

County Fair Racing Discouraged.

The National Association of Automobile Manufacturers has voted to discourage the indiscriminate entry of automobiles in races gotten up by local fairs and the like, owing to the great expense of carrying out such contests in satisfactory shape. By a vote taken July 23d, the members of the association are formally requested to make no agreement to enter such events unless the latter have the sanction of the association. This, of course, does not refer to the New York to Buffalo contest, which the association has already approved.

NEW STYLES OF AUTOMOBILES

The Fanning Electric Runabout.

This carriage, which is illustrated in Fig. 1, is a new vehicle with several original features in the running gear and controller. As the photograph shows, no reach rods are used between the axles. The rear axle is connected with the body by elliptic springs, and the front of the body rests on a transverse spring, while distance rods steady the ends of the front axle. The motor is suspended from the rear axle and from two springs fastened to the body, which latter relieve the axle of most of the weight of the motor. An eccentric bushing at the point where the motor hinges on the axle allows of accurate adjustment of the driving gears.

The controller is arranged so that it locks itself while charging, thus preventing accidental starting up of the machine. Porter batteries are used, removable from the rear end of the body, and are stated to have a radius of forty miles on a charge. The motor is 2 HP., and the total weight of the machine is 950 pounds. It is built by the Fanning Mfg. Co., corner Morgan, Pratt and Superior Sts., Chicago.

The Woods "Queen" Electric Victoria.

The handsome carriage shown in Fig. 2 is the latest of the Woods vehicles, built by the Woods Motor Vehicle Co., Chicago. It is equipped with two 2½-HP. Woods electric motors, and has a 40-cell Porter battery rated at sixty miles capacity. The maximum speed is 16 miles. The carriage work is of oak and ash, painted dark green and with leather upholstery of the same color.

The Grout Steam Dos-a-Dos.

This is a recent addition to the line of steam vehicles built by Grout Bros., Orange, Mass. It has an engine and boiler on the usual lines, the latter having 45 square feet of heating surface. The burner is regulated by hand, though an automatic regulator is supplied if desired; and a pilot light keeps up the pressure when the main flame is extinguished in standing still. This model has extra heavy rear springs, and the rear footboard folds up when the back seat is out of use.

The Thompson Electric Runabout.

A light electric runabout recently put on the market is shown in Fig. 4. Its especial feature is the running gear, which has a solid trussed rear axle, with the motor carried just forward of its centre. The motor shaft contains the differential, and the two ends of the shaft drive the rear wheels independently by gear reduction. Twenty cells of Willard battery are carried, giving a rated mileage of 20 miles, but special long-distance batteries may be substituted. With the regular battery the total weight is 650 lbs. The steering lever is carried by the body, obviating the vibration felt when it is connected directly to the axle. The vehicle is built by Andrew C. Thompson, 313 West Front St., Plainfield, N. J.

The Stanton Steam Carriage.

A newcomer among steam carriages is the vehicle illustrated in Fig. 5, and built by the Stanton Mfg. Co., of Waltham, Mass. This machine is substantially constructed, and has a twin-cylinder double-acting engine of 2½ by 3½-inch cylinder dimensions, and a steel shell boiler measuring 18 by 18 inches, with 3-16-in. shell. The burner has a pilot light attached, which enables the main flame to be extinguished when the carriage is left standing. An ejector is attached to the boiler, by means of which the rider may fill his tank from any source of supply without leaving his seat, a water gauge attached to the tank indicating the level of the water. The running gear is so designed as to obviate torsional stresses. The water tank is said to carry sufficient water for a journey of twenty-six miles, while the gasoline supply will last seventy-five miles. The weight of the carriage complete is 1,150 pounds.

The "Knickerbocker" Gasoline Automobile.

In Fig. 6, is illustrated a new light gasoline machine in which the general lines of the French voiturette are quite closely followed, producing a vehicle in which small power and weight are combined with considerable capacity as regards speed and hill-climbing ability. The motor, which is a 5 HP. De Dion, is located under a ventilated hood in front, with a flywheel clutch just back of it, and a short longitudinal shaft runs back to the transmission gear case beneath the footboard. There are three forward speeds and one reverse, all controlled by one lever on the steering column. From the gear case a longitudinal shaft runs back to the rear axle, where a bevel pinion engages a bevel gear on the differential, no chains being used. The latter shaft is made flexible by universal joints, and is also slightly extensible lengthwise, so that relative motion between the axle and the gear case, which is attached to the main frame, is entirely free. A dust proof case encloses the differential and bevel gears.

The arrangement of the speed changing gears is such that for the high speed the two longitudinal shafts are clutched directly together. The rear bevel pinion then runs at the speed of the motor, no other gears being at work. The running gear includes elliptic front and rear springs, and owing to the flexibility of the transmission shaft no underframe is needed.

The regular brake, operated by a pedal, acts on the transmission shaft, and emergency brakes, applied by a lever, act on the rear wheels. Steering is by irreversible hand wheel. The water circulation is by gravity, the cooling coil being on each side of the motor hood, and no pump being used. An oil tank on the dash supplies the crank case, gear case, and differential gear case by sight feeds. The regular De Dion vaporizer is used, and intermediate speed control is obtained by shifting the spark. The three principle speeds (by gearing) are 8, 16 and 30 miles an hour. With rumble seat, as shown in the illustration, the total weight with tanks full is given as 700 lbs. With tonneau body the weight is 800 lbs. The exceptional efficiency claimed for the machine is credited very largely to the flexible transmission, which permits the use of very light running gear, and also to the use of three speeds instead of two, and to the direct transmission on the high speed.

The Ward-Leonard Electric Co., Bronxville, N. Y., are the builders of this machine.

A Benevolent Society For Automobile Operators.

A useful organization, in which the mutual benefit plan is extended to operators of automobiles, is the New York Automobile Operators' Benevolent Society, now about one year old. It is organized for relieving the financial needs of its members in cases of sickness or death, and incidentally as a social club as well. Its initiation fee is $1 and the dues 50 cents a month, which must be paid six months before the member is entitled to receive financial aid. Seven dollars per week is paid for disability caused by sickness or accident. The society is now located at 305 W. 54th St., New York city, where meetings are held on the first and third Mondays of each month. The present officers are: President, T. P. Murphy; recording secretary, E. J. McEwen; financial secretary, Wm. Hornsby; treasurer, B. E. Bellows. Any person capable of driving an automobile may become a member. Persons desiring to enroll may call at the club's headquarters or communcate with Ralph C. Chadsey, room 417, 99 Nassau St.

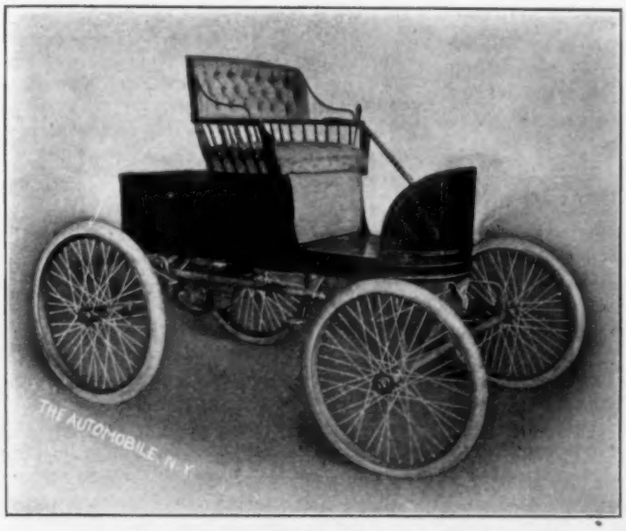


FIG. 1. THE FANNING ELECTRIC RUNABOUT.

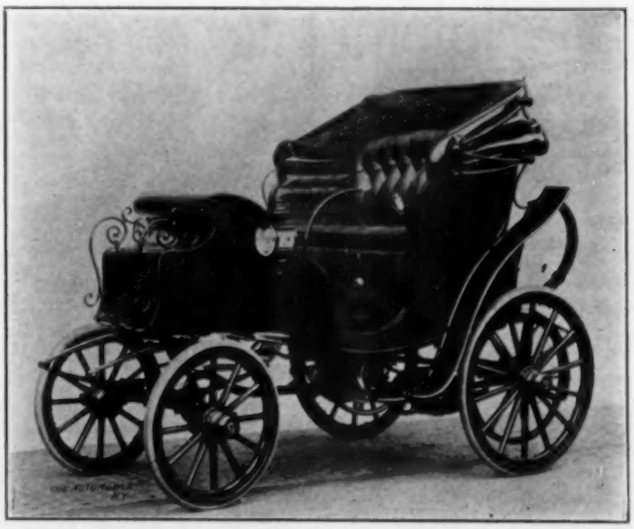


FIG. 2. THE WOODS QUEEN VICTORIA.

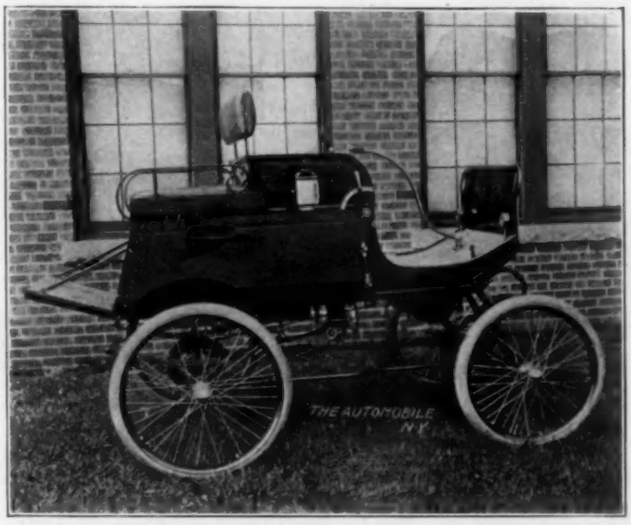


FIG. 3. THE GROUT STEAM DOS-A-DOS.

FIG. 4. THE THOMPSON ELECTRIC RUNABOUT.

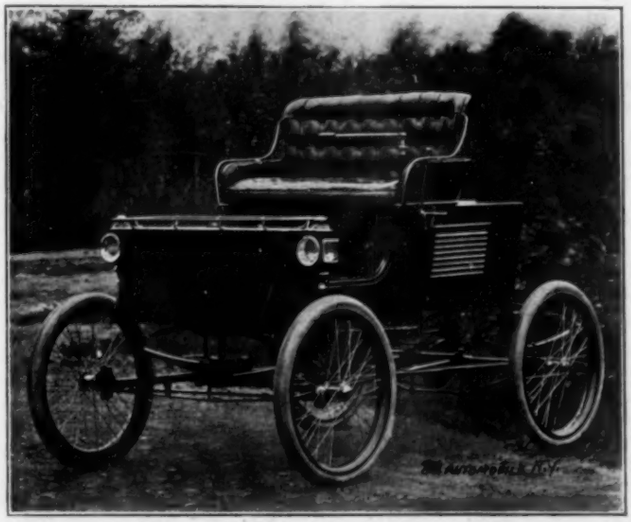


FIG. 5. THE STANTON STEAM CARRIAGE.

FIG. 6. THE "KNICKERBOCKER" GASOLINE AUTOMOBILE.

NEW STYLES OF AUTOMOBILES.

The Automobile

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CONTENTS.

(Copyright, 1901, by The E. L. Powers Co. All rights to signed articles reserved.)

The Paris-Berlin Race.....181, 182, 183
The "Red Rover."..... 183
Public Automobiles in New York City..... 183
Steam and Gasoline Vehicles Compared. By Earl P. Mason.....184, 185
The Smallest Electric Carriage in the World. 185
Two Years' Experience with a Gasoline Carriage. By Campbell M. Chittenden.185, 186
The Winton 40-HP. Racer.....186, 187
The De Dion-Bouton 10-HP. Racer..... 187
The Robinson 18-HP. Touring Car..... 187
County Fair Racing Discouraged..... 187
New Styles of Automobiles.....188, 189
The Fanning Electric Runabout.
The Woods "Queen" Electric Victoria.
The Grout Steam Dos-a-Dos.
The Thompson Electric Runabout.
The Stanton Steam Carriage.
The "Knickerbocker" Gasoline Automobile.
A Benevolent Society for Automobile Operators 188
Editorials 190, 191
As Other Road Users See It.
The Endurance Test and its Rules.
Clutch Versus Throttle Control for Gasoline Vehicles.
Counsel Without Discernment.
A Golden Mean Not Found..... 191
Using Canvas Tubes..... 191
Power, Weight and Speed in France..... 191
It Endures the Heat..... 191
Pan-American Touring Routes..... 191
A Bold Invitation..... 191
Amended Rules for the New York to Buffalo Endurance Run..... .....192, 193
To Lecture on the Air-Cooled Motor..... 193
Gasoline Vehicle "Don'ts."..... 193
Club News and Views..... 194
Club Directory.
Automobile Club of America.
Automobile Club of California.
To Amalgamate.
Bostwick's Mile Record.
League of American Automobilists.
Notes.
Correspondence 195, 196
Chimney Covers on Steam Vehicles—Exchanging Experiences.
An Automobile for the Hills.
Thinks the Cost Excessive.
Duryea Doesn't Agree.
Tiller Steering and Straight Driving.
Steam Carriage Prices Raised..... 196
Improvements in the Locomobile..... 196
Motorettes in Boston..... 196
Wanamaker Opens an Automobile Station.. 196
Notes 197
The Crestmobile 197
The Empire Transmission Gear Practically Applied 197
New Prices on Orient Goods..... 197
Business News 197, 198
Patents 198
Advertisements.....197, 198, 199, 200, 201, 202, 203, 204

As Other Road Users See It.

The very suggestive letter of Mr. John Bethen Uhle, on another page of this issue, brings up one or two points regarding wheel and lever steering which are seldom heard of in discussions on this subject.

It is customary to approach the question from the standpoint of the driver pure and simple, and with the advocates of tiller or lever steering the argument is generally narrowed down to a claim that this system gives more instantaneous control in an emergency. No one who has seen a good driver handle his machine will deny that extraordinary clever work can be done with the wheel; but even granting for the sake of argument that the lever is quicker, and that this quickness may sometimes save a smash, it remains true that in the sight of other users of the highway the case is yet far from complete. There are several arrangements of the steering axle pivots, whereby a shock to the front wheels is prevented from reaching the lever; but most of these are covered by patents, and, broadly speaking, the user of any but a light lever-steered vehicle will inevitably select the easiest part of the road in order to rest his arm. More than this, when the road is smooth across its width he will unconsciously relax his attention to the steering, and thence ensues the involuntary "wabbling" which Mr. Uhle describes.

Neither of these things, of course, is noticeable in the city, because constant vigilance is there imperative, but we are convinced that together they are responsible for a great deal of the rural irritation which the automobile continues to excite even after its novelty has worn away. That the driver is usually quite unaware of his serpentine course is not wholly blamable against him, as he has enough to do as it is; but it is rather an additional reason for using the wheel.

The Endurance Test and its Rules.

The amended rules governing the New York to Buffalo endurance test, published in full on another page, bear evidence of being carefully thought out, and reflect much credit on the painstaking committee having the difficult task in charge.

As our readers are aware, we are of the opinion that the good or bad effect of this event will be in the public impression created by the chauffeurs themselves quite as much as in any demonstration of the staying powers of their machines. It is most excellent, certainly, to demonstrate on a grand scale that the mechanical conveyance can be worked treble as hard as a horse, and that it is reasonably reliable at that, but we should by all means avoid conveying the impression that the driver of such a vehicle, having at his command a giant's strength, cannot resist using it like a giant, and that machine and man must, therefore, for the common safety be banished from the highway.

However erroneous such an impression might be, it would evidently not only defeat the main purpose of the test, which is to demonstrate the automobile's possibilities to the public at large, but would be particularly disastrous to the business and the sport here in New York State. The Doughty bill was put through the legislature against a small but active opposition. Most of the up-state districts were neutral, because as yet untroubled by the invasion. Introduce the automobilist to them as essentially a scorcher and a nuisance, and very little will be needed—a few runaways, a few market wagons upset—to start an outcry that will result in wiping out the Doughty law and entailing a protracted legal battle with five-mile and ten-mile speed limits—the more exasperating because so needless.

A study of the rules shows that, short of actual disqualification, there is as little encouragement as possible given to any attempt at a long-distance record. An average speed exceeding 15 miles an hour will be officially recorded as 15 miles, and no other can be published. The control periods are so located with reference to the starting time that very little scorching can be done without involving a corresponding wait, and if care be taken to start the fast machines first this will be still further reduced. It needs only the strict enforcement of the rules, and the placing of energetic road stewards at proper points, to cover the matter of speed as thoroughly as the circumstances will permit.

It now behooves the manufacturers, seeing that to advertise the speed of their vehicles among the fraternity will cost them the good-will of the public at large, to give strict instructions to their operators to use the utmost consideration in driving. By so doing they will not only avert a blow to automobilism in New York state, but will favor their own chances on the official records of the test as well.

Clutch Versus Throttle Control for Gasoline Vehicles.

A point not always realized by the novice in gasoline vehicle design is the enormous practical difference between throttle control on a steam engine and the same system as applied to an explosion motor. He is very apt to reason that, because the former is both simple and efficient, the latter must be likewise, and he overlooks the important fact that the explosion motor runs by intermittent impulses and has a heavy flywheel, whereas the turning effort of a two-cylinder double-acting steam engine is nearly uniform, and it has no flywheel at all. For this reason the former cannot be slowed down as quickly as the latter, and, when it is slowed down,

gathering speed again under load is a slow process. The effect of this on the manoeuvring qualities of the machine is very marked, as anyone knows who has tried it, and the operator soon resorts to the clutch when he wishes to slacken pace in traffic. This not only permits a quick stop, but, as it allows the motor to run rapidly meanwhile, it allows energy to be stored in the flywheel for an instantaneous acceleration when the clutch is once more engaged.

Usually, however, we find the brake managed by one lever or pedal, the clutch by another, and the throttle (to prevent racing when the clutch is off) by a third, so that what was intended to be simplicity itself turns out to be decidedly complicated. Our European cousins do the thing much better. They put, to start with, a hit-and-miss governor on the motor; that they engage the clutch by a spring, and connect the releasing mechanism to the brake pedal. A simple thrust on the latter will retard or stop the machine, and it "jumps" at once when the pedal is freed. In city traffic, when the pace must be capable of instant control, this system is as near to perfection as we are likely to get.

There is here an excusable prejudice against hit-and-miss governing, and unless efficient throttling governors are produced we are likely to be satisfied to do their work by hand. Meanwhile there are several machines of domestic origin in which a very satisfactory equivalent to the French system is obtained by connecting the brake and the high-speed clutch, so that a single movement does for both. As the part played by the flywheel inertia in manoeuvring is more fully understood their number will assuredly increase.

Counsel without Discernment.

Suggestions continue to be made by the unenlightened that the problem of automobile speed be coped with by some sort of compulsory attachment, which would automatically prevent the speed from exceeding a given limit. It is but another instance of the popular error which automobilists themselves unfortunately help to encourage, namely, that automobiles are dangerous chiefly on account of their speed. In reality, any speed attainable is safe under proper conditions, and speeds up to 25 or 30 miles an hour, such as may be reached by ordinary machines, are perfectly safe in the country if the driver uses proper care and observes the rules of the road. It is the neglect of these rules, and the seeming indifference of many drivers to any inconvenience to which they may subject other users of the road, short of actual collision, which constitute the real nuisance in automobiling. Eliminate these, and the public will think no more of a 30-mile racer than it does of the trolley cars.

The Golden Mean Not Found.

The unfortunate killing of a boy by one of the contestants in the Paris-Berlin race has resulted in an outcry in the French Chamber of Deputies which seems likely, for the present at least, to put an end to road racing of all sorts in that country. The Premier, M. Waldeck-Rousseau, has felt obliged to give his word that there shall be no more of it. Probably this edict will go the way of previous ones of the same sort, and in a year or two races will be in full swing once more. The French public seems to be unable to act with moderation in anything.

Using Canvas Tubes.

An Englishman has conceived the idea of using canvas hose instead of the usual flange copper tubes for the radiating coils of gasoline vehicles. His idea is that the canvas would sweat slightly, thus keeping the outer surface moist, and the impinging air would produce so rapid an evaporation as to keep the tubes always cool. The canvas tubes, of course, are expected to be cleaned from dust after every run.

Power, Weight and Speed in France.

It is said that the Mors racers of 28 nominal horse-power, of which several, including Fournier's, were in the Paris-Berlin race, are required to do a kilometer in 32 seconds before they are passed by the makers. This is just a shade under 70 miles an hour. The nominal power of these machines is believed to be much less than the maximum of which they are capable. Their weight is put at 2,860 lbs., as against 2,640 lbs. for the Panhards of the same nominal power.

The seven horse-power Renault voiturettes which performed so remarkably in the same race are said to weigh but 870 lbs. They are fitted with De Dion motors, gviing a maximum of 8 horse-power.

It Endures the Heat.

The superiority of the automobile over the horse was perhaps never so clearly shown as during the hot wave under which New York sweltered in the first week of July. Not only were truck horses to be seen literally by the dozen, dead or dying in the streets, but the horses used in the ambulance service of the hospitals were themselves exhausted by the heat. The ambulance service would have been completely crippled, at a time when it was never more needed, had it not been for the ready offers of assistance that came from two or three New York newspapers, which placed their delivery wagons at the service of the hospitals, and for the action of the Locomobile Company in placing at the service of the Roosevelt Hospital two steam carriages, which attended to practically all the ambulance calls of that hospital. The electric vehicle companies also, both in New York and in Philadelphia and Washington, came liberally to the rescue with emergency wagons and broughams.

Pan-American Touring Routes.

Under the direction of W. Sheldon Bull the bicycle and automobile touring section of the Pan-American Exposition Press Department has issued a folder containing ten touring routes to Buffalo. These routes start from the following cities: Kingston, Ont., via Toronto; Boston; New York via Albany; New York via Delaware Water Gap; Washington, Baltimore and Philadelphia; Pittsburg via Erie; Cincinnati via Cleveland; Indianapolis via Columbus; Chicago via Cleveland; Milwaukee via Grand Haven and Detroit, Mich., and Hamilton, Ont. In the main the routes coincide with the bicycle routes issued by the L. A. W. The pamphlet is neatly gotten up, and contains a road map of Buffalo and the adjacent counties.

A Bold Invitation.

The British Power, Traction and Lighting Co., Ltd., which controls the English rights in the Gardner-Serpollet steam carriages, has adopted an original method of comparing their machines with those of other makers. In brief, they invite any other maker to send his best machine and his best operator to their factory, and offer to provide free storage and repair facilities and to permit the operators to show their machines to every customer at the factory. The only condition is that the rival machine and the Gardner-Serpollet carriage shall be tested in the customer's presence under identical conditions and over the same ground.

Notes.

A correspondent of an English contemporary says that French chalk is very useful to prevent slipping in a conical friction clutch such as is used on most French machines.

The Board of Supervisors of Nassau County, L. I., has adopted a speed limit of eight miles an hour in villages and 15 miles in the country, and has added a clause requiring automobile drivers to stop when signalled by drivers of restive horses.

The Common Council of Rochester, N. Y., has passed an ordinance restricting the speed of automobiles to six miles an hour within a radius of one mile of the business centre, and to eight miles an hour outside that radius and within the city limits.

On account of injuries received in an accident some months ago, Henry Sturmey, the able editor of our English contemporary, The Autocar, has devolved his duties upon H. W. Staner, who will henceforth edit the paper. Mr. Sturmey, however, will continue to contribute occasionally.

Amended Rules for the New York to Buffalo Endurance Run.

In our June issue were published the general rules governing the endurance run next month under the auspices of the A. C. A. These rules were prepared by the technical committee, and since that time the matter has been in the hands of a special committee, consisting of Messrs. W. M. Power, W. E. Scarritt and Harlan W. Whipple, who have revised the rules and added to them in detail.

The run will start Monday morning, Sept. 9, from the club house, at 58th St. and Fifth Ave., in New York, and terminate in Buffalo on Saturday afternoon, Sept. 15th. Following are the amended rules in detail:

I

It will be assumed that every contestant is acquainted with the Rules of the Contest, and by entering therein he agrees to abide by said Rules. In the event of dispute concerning the interpretation of the Rules, the decision of the Contest Committee shall be final. The Committee reserves the right to alter or amend these Rules from time to time as it may deem expedient.

II.

The contest shall be open to all classes of self-propelled vehicles made in the United States or abroad, but no manufacturer, agent or private owner shall be allowed to enter more than three vehicles in any one class.

Application blanks will be forwarded by the Secretary of the Club upon request.

III.

ENTRIES.

(a) The time for receiving entires will expire on August 31st, 1901.

(b) All entires must be accompanied by the following information in full:

Weight of the motor vehicle, including fuel, supplies and equipment.

Capacity of water and capacity of gasoline.

Number of miles, with the number of passengers, the vehicle is able to run on ordinary roads without any replenishing of fuel or water.

Maximum and minimum rate of speed for each vehicle.

Full name of manufacturer.

Place of manufacture.

Rated horse power of the motor, number of cylinders, bore, length of stroke and normal speed of engine.

IV.

ENTRANCE FEES.

(a) The entrance fee for all classes, motor cycles excepted, up to and including August 15th, 1901, shall be $50 for each vehicle. In the motor cycle class the entrance fee shall be $25 for each vehicle. After August 15th, ten per cent. will be added to the entrance fee for all classes.

(b) The entrance fees shall be paid to the Treasurer of the Club at the time application for entry is made.

(c) Any person making an entry agrees that in the event of the vehicle being disqualified or failing to take part in the Contest, the entry fee shall be retained by the Club.

(d) The Club shall have the right to refuse an entry without stating any reason.

V.

PASSENGERS.

In classes A, B and C each vehicle shall carry at least two persons. These may be changed and others substituted within the confines of any control, but if passengers be changed outside of control, the vehicle shall be subject to disqualification.

VI.

STARTING OF THE CONTEST.

All entries for the Contest shall appear in person before the Committee at the Automobile Club on Friday, A. M., September 6th, 1901, and after giving full information as required by Rule 3 (b), receiving their official number and being officially recorded, shall then go to a place designated by the Committee and have their entry examined by the Committee's representative, the carriage weighed, and an official seal affixed thereto.

VII.

DISQUALIFICATION.

(a) Disqualification shall mean that on notice being served on any vehicle, it shall cease to run in the Contest and shall not receive a certificate or mention in the records.

(b) A person on receiving notice of disqualification shall withdraw his vehicle and immediately remove the official number therefrom.

(c) No notice of disqualification shall be served unless the person in charge of the vehicle has first been notified of the act which it is claimed should disqualify the vehicle. If the act be disputed, disqualification shall be postponed until the Contest Committee, at a meeting to which all concerned shall be invited, shall take evidence and render their decision.

(d) The person so disqualified shall have no claim on the Club of any kind or nature whatsoever.

VIII.

PROTESTS

(a) Any contestant has the right of protest, but the Committee may refuse to consider such protest. In the matter of protests, the contest Committee or its official representatives may interfere.

(b) Any contestant entering a protest must do so in writing, and shall substantiate the grounds of his protest. The party protested against shall have the right of being heard in opposition. If the party protested against does not admit the accuracy of the protest, the matter shall be adjudicated by the Contest Committee.

(c) All protests must be filed within twenty-four hours of the time of the commission of the act against which protest is made.

(d) All parties making protests shall be required to make a deposit of Ten Dollars, which shall be forfeited in the event of the protest not being sustained, the intention being to put a penalty on frivolous, immaterial or unsubstantial protests which would consume unnecessarily the time of the Committee.

IX.

CLASS LETTER AND NUMBER.

(a) Each contesting vehicle must have securely attached to it in a conspicuous position on both front and rear, an official letter and number corresponding with the catalogue class and number. There shall be no other mark or sign on any vehicle other than the owner's initials and the manufacturer's usual name or number plate as affixed to a vehicle when sold to a customer.

(b) Those having charge of vehicles will be held responsible for the plates being in conspicuous positions and clearly legible.

X.

ROAD STEWARDS.

Stewards shall be appointed and located where it may be necessary to stop contestants or require them to drive at a limited speed, and the Stewards shall see that the instructions are strictly followed.

XI.

ROAD REGULATIONS.

(a) All vehicles going in the same direction must pass other vehicles to the left in accordance with the rules of the road, and vehicles meeting each other must pass to the right.

Vehicles must keep to the right of the center of the roadway, except when there are no approaching vehicles and the conditions are such that it is impracticable to travel on the right side of the highway. If for any reason it is necessary for vehicles to travel on the center or left side of the roadway, such vehicles must cross to the right side, irrespective of the condition of the roads, as soon as signalled by an overtaking or an approaching vehicle.

Vehicles must signal one another when approaching in either direction.

(b) No vehicle shall be pushed or assisted by any one other than its occupants under penalty of disqualification, except that the penalty for a vehicle being towed in any period shall be disqualification for that period.

(c) Contestants shall be responsible for any violation of law and for all civil and criminal penalties.

(d) Contestants must comply with the traffic regulations of the local police.

(e) If a contestant fails to stop his vehicle on request from the driver of a frightened horse, or in any manner shows himself inconsiderate of other users of the roadway, his vehicle shall be subject to disqualification.

(f) Contestants shall inform themselves thoroughly in regard to the route, and no allowance will be made for any mistakes they may make.

(g) No contestant shall take any route other than that laid down in the official maps, which will be furnished for each stage.

XII.

CONTROLS.

(a) Controls are to be officially established at the beginning of each day's run, at lunching places and at the end of each day's run. The start is to be made each morning at 8 o'clock, and an hour and a half will be allowed for luncheon. Any contestant arriving at the noon control at 12 o'clock or after will be allowed but one hour for luncheon. He will be called one hour after the time of his arrival and his time will be counted from the time that he is called; but no vehicle will be allowed to leave the noon control before one o'clock.

(b) The noon control will open at 11 A. M., and close at 3.40 P. M.

(c) The night control will open at 4 P. M. and remain open until 9.20 P. M.

(d) The time of arrival of each vehicle at the point of control shall be recorded by the officials at control on the record sheets, and also on the record book of those in charge of the vehicle.

(e) The site of control shall be designated by a red flag with the word, prominently printed thereon in black, "CONTROL." This flag shall be prominently displayed on both sides of the road at the point of control. There shall be notification by means of a green flag at 200 yards in advance of the control point as a warning of the approach of the control.

(f) Controls are to be established in the following manner: If a green flag is displayed, the vehicle shall slow down to a speed of not to exceed eight miles per hour until a white flag is passed, when speed may be resumed as before. On coming to a red flag, the vehicle shall come to a full stop until the driver is permitted by the Steward to proceed. At night, lanterns similarly colored may be used instead of flags.

(g) Provision for shelter will be made at night. Vehicles may take on fuel and supplies at the noon control and at stopping places for the night, where supplies will be provided. Any vehicle requiring supplies at other points will be required to make their own arrangements for the same.

(h) There shall be at each night's stopping place a storage enclosure or tent in charge of a superintendent and assistants, for the storage of vehicles for the night. Watchmen will be on duty during the night.

(i) Passes will be furnished to vehicles granting them admission to or exit from the official enclosure provided for the storage of vehicles at each night control.

XIII.

HILL CLIMBING CONTEST.

(a) Controls are also to be established on the Hill Climbing Contest near Little Falls, or any

other place that may be chosen by the Committee.

(b) One-half mile from the base of the hill a yellow flag, with the letter "H" thereon in black, will be prominently displayed at each side of the road as a warning of approach of the hill. A short distance from the base of the hill a second set of flags will be placed. The vehicles will line up, in the order of their approach to the second flag, on the right side of the road, allowing ten feet space between vehicles. Each vehicle will be started at a given signal by the proper official.

(c) The time and manner of the performance on the hill will be officially recorded. Time will also be taken on reaching the summit of the hill.

(d) This trial will be a separate contest. The time occupied from reaching the control at the base of the hill to leaving the control at the summit will be deducted from the general running time.

XIV.

SPEED.

(a) No credit for speed exceeding fifteen miles an hour will be allowed.

(b) Attention is called to the general State law covering speed, and all contestants will be required to conform thereto.

XV.

STARTS AND STOPS.

(a) Vehicles will be started from the control the first morning at 8 o'clock, except in Class E, which may start earlier by arrangement. At the time of starting from each control, the vehicles shall approach the starting line and take their place one behind the other in the order of their approach to the starting line, leaving a space of at least ten feet between each vehicle. As each vehicle starts, the others shall move up one place. Any vehicle failing to keep its position in the line shall fall out and go to the foot.

(b) Vehicles approaching control points shall follow the same rule as at starting points.

(c) If it becomes necessary for a vehicle to stop, it must first be driven to the extreme right of the road as nearly as practicable.

XVI.

CERTIFICATES.

(a) The Committee shall post the results of each day's run as soon as practicable, and may furnish the same to the press.

(b) Contestants shall not publish or communicate for publication any other times than those contained in the Club certificate.

(c) In the event of any subsequent alteration by the Committee of the records on the certificates, owing to protests or other causes, the contestant will only publish the records as amended, on pain of disqualification.

(d) The certificates will recognize no speeds in excess of fifteen miles an hour, but will, for a vehicle, state as follows:

Official No.
Class
Maker
Entered by
Weight
Record for day of 1901.
Number of passengers carried
Route
Distance
Average miles per hour.

XVII.

STAGES.

The total distance is to be divided into stages for each day on the basis of approximately 85 miles per day. Following are the stages with the approximate distance:

1st Stage. From Club House to Poughkeepsie	90 miles
2d Stage. From Poughkeepsie to Albany.	70 miles
3d Stage. From Albany to Little Falls (including a Hill Climbing Trial near Little Falls)	85 miles
4th Stage. From Little Falls to Syracuse	85 miles
5th Stage. From Syracuse to Rochester.	90 miles
6th Stage. From Rochester to Buffalo	80 miles
Total Distance	500 miles

XVIII.

BASIS OF CLASSIFICATION.

All vheicles, whether electric, steam, gasoline or otherwise, shall operate in the same class, which classification shall be on the basis of weight.

XIX.

CLASSIFICATION AND DIVISION.

Vehicles shall be divided into the following classes: all four-wheeled vehicles to carry two or more persons. Three-wheeled vehicles carrying two passengers side by side and conforming in all other respects to four-wheeled vehicles, to be provided for by special arrangement in Classes A or B.

Class A.—Under 1,000 pound class: Four-wheeled motor vehicles weighing under 1,000 pounds, in commercial running and operating condition with all tools, fuel and supplies on board.

Class B.—1,000 to 2,000 pound class: Four-wheeled motor vehicles weighing between 1,000 and less than 2,000 pounds, in commercial running and operating condition, with all tools, fuel and supplies on board.

Class C.—2,000 pounds and over class: Four-wheeled motor vehicles weighing 2,000 pounds or over in commercial running and operating condition, with all tools, fuel and supplies on board.

Class D.—Motor Cycle class: Motor bicycles, motor tricycles and motor quadricycles.

XX.

CONDITIONS.

The conditions of this endurance test shall be average speed for the six days, and any competitor falling below an average of 8 miles per hour (except in Class E) for any one period shall not receive any credit for that period.

XXI.

AWARDS.

Certificates shall be awarded by the Club as follows:

First Class Certificate, average speed, from 12 to 15 miles per hour.

Second Class Certificate, average speed from 10 to 12 miles per hour.

Third Class Certificate, average speed from 8 to 10 miles per hour.

XXII.

PUBLIC DELIVERY VEHICLES.

shall be classified as follows:

Class E.—Light Delivery: Load not less than 500 pounds, exclusive of operators, fuel and water.

10 to 12 miles an hour for First Class Certificate.
8 to 10 " " " " Second " "
6 to 8 " " " " Third " "

Heavy Delivery: Load to be not less than one-half rated capacity. Minimum to be not less than 1,500 pounds.

8 to 10 miles an hour for First Class Certificate.
6 to 8 " " " " Second " "
4 to 6 " " " " Third " "

Trucks: Load to be not less than one-half rated capacity. Minimum load to be not less than 3,000 pounds.

6½ to 8 miles an hour for First Class Certificate.
5 to 6½ " " " " Second " "
3½ to 5 " " " " Third " "

To Lecture on the Air-Cooled Motor.

The E. R. Thomas Motor Co. announces that during the Pan-American meet of the L. A. W., to be held in Buffalo from Aug. 12 to 18, the company will give free lectures at its factory, corner of Broadway and Elm St., on the operation and care of air-cooled motors. To these lectures every rider, dealer and repair man interested in the motor bicycle is invited. A room of the factory will be fitted up for the purpose, and the lectures will include practical demonstrations and also an explanation of the construction of the 'Auto-Bi."

Gasoline Vehicle "Don'ts"

The following very practical series of "Don'ts" has been prepared by Mr. J. W. Packard of the Ohio Automobile Co. While intended primarily for the benefit of users of the Packard carriage, nearly all of the hints are equally useful to owners of any other type of gasoline vehicle.

1. Don't forget to turn on gasoline and spark before attempting to start.

2. Don't forget to turn oil on and close compression after starting.

3. Don't try to run carriage without oil in oil cups.

4. Don't try to run without water in tank.

5. Don't try to run without gasoline in tank.

6. Don't leave carriage to freeze in winter.

7. Don't jerk in your clutches; bring them up gradually.

8. Don't change gears on hill until carriage is nearly to a standstill.

9. Don't start down hill at a rapid gait and then jam on brakes.

10. Don't try to turn corners rapidly with brakes on.

11. Don't forget to turn off oil cups when shutting down.

12. Don't neglect to turn off gasoline at night.

13. Don't tighten clutches so that they drag or bite.

14. Don't pull carbureter to pieces without carefully noticing how it is put together.

15. Don't screw up governor contact points too tightly.

16. Don't tinker with adjustments of governor, or if you should, don't advance spark from center point when turned over by hand.

17. Don't neglect to keep contact points clean.

18. Don't allow any bell hanger or bicycle repair man to add improvements to your carriage.

19. Don't use cheap or poor lubricating oil.

20. Don't tighten the reverse clutch or brake when it is the slow speed clutch that you are after.

21. Don't let your engine race at any time or run at excessive speed when using slow speed gear.

22. Don't leave your carriage unattended with engine running.

23. Don't expect that all you will have to do is to pull the lever. You must learn to thoroughly understand the mechanism and adjustment of your machine.

24. Don't say, "This wagon works in a jerky manner." The proper expression is, "I am pulling clutches into gear too suddenly, clutches are adjusted too tightly or are not properly oiled, or I am applying power too suddenly."

CLUB NEWS AND VIEWS

Club Directory.

Automobile Club of America, S. M. Butler, Acting Secy., 753 Fifth Ave., New York City.

Automobile Club of New England, Geo. E. McQuesten, Secy., Brookline, Mass.

Automobile Club of Baltimore, W. W. Donaldson, Secy., 872 Park Ave., Baltimore.

Automobile Club of Bridgeport, F. W. Bolande, Secy., 49 Cannon St., Bridgeport, Conn.

Automobile Club of Brooklyn, C. Benton Dix, Secy., Hotel Clarendon, Brooklyn, N. Y.

Automobile Club of Cincinnati, R. H. Cox, Secy., Cincinnati, O.

Automobile Club of Columbus, C. M Chittenden, Sec., Broad St., Columbus, O.

Automobile Club of New England, Geo. E. McQueston, Secy., Brookline, Mass.

Automobile Club of Rochester, Fredk. Sager, Secy., 66 East Ave., Rochester, N. Y.

Buffalo Automobile Club, Ellicott Evans, Secy., Lenox Hotel, Buffalo, N. Y.

Chicago Automobile Club, H. M. Brinckerhoff, Secy., Monadnock Block, Chicago

Cleveland Automobile Club, Windsor T. White, Secy., Cleveland, O.

Columbia College Automobile Club. Lewis Iselin, Secy., Col. College, New York.

Dayton Automobile Club, E. Frank Platt, Secy., Dayton, O.

Herkimer Automobile Club, W. I. Taber, Cor. Secy., Herkimer, N. Y.

Hudson County Automobile Club, F. Eveland, Secy., Jersey City, N. J.

Indiana Automobile Club, August Habich, Secy., Indianapolis.

Long Island Automobile Club, C. W. Spurr, Jr., Secy., 1190 Fulton St., Brooklyn, N. Y.

Massachusetts Automobile Club, L. E. Knott, Secy., Ashburton Pl., Boston.

New Bedford Automobile Club, E. G. Watson, Secy., New Bedford, Mass.

New Jersey Automobile Club, Dr. H. Power, Secy., Upper Montclair, N. J.

North Jersey Automobile Club, E. T. Bell, Jr., Secy., Paterson, N. J.

Philadelphia Automobile Club, Frank C. Lewin, Secy., Hotel Flanders, Phila., Pa.

Pennsylvania Automobile Club, H. J. Johnson, Secy., 138 N. Broad St., Philadelphia.

Rhode Island Automobile Club, F. A. Fletcher, Secy., 42 So. Water St., Providence.

San Francisco Automobile Club, B. L. Ryder, Secy., San Francisco, Cal.

Troy Automobile Club, J. S. Thiell, Secy., Troy, N. Y.

Worcester Automobile Club, H. E. Sheiland, Secy., Worcester, Mass.

Automobile Club of America.

At a special meeting of the Automobile Club of America, held July 17, 1901, the following amendments to the Constitution and By-Laws were adopted:

Article V., Section 2, of the Constitution, amended to read:

"Section 2.—The general management and control of the affairs, funds and property of the Club shall be vested in a board of nine trustees, exclusive of the President, First Vice-President and Treasurer, who shall ex officio be members of said board."

Chapter II., Section 1, of the By-Laws, amended to read:

Section 1.—"The annual meetings of the Club shall be held at the Club House in the City of New York on the third Monday in November in each year. Notice of the time and place of holding the same shall be sent to each member, at least ten days prior thereto."

Chapter VII., amended by adding the following:

"The Secretary shall be employed by the Governors of the Club and work under their direction, and be paid such salary for his services as shall be fixed by the Board of Governors."

Chapter VIII., new section added:

Section 3.—"The Treasurer shall be ex officio a member of the Board of Governors."

Chapter XII., Section 4, amended to read:

Section 4.—"Any member whose yearly dues shall remain unpaid for sixty days after they shall have become due," etc.

The subject of the affiliation with the Automobile Club of America of the various automobile clubs throughout the United States was discussed, and a committee of seven appointed to formulate a plan for such affiliation and submit it to the Board of Governors, or to the Club, as they might deem best; said committee to consist of A. R. Shattuck, President of the club; Albert C. Bostwick, Geo. F. Chamberlin, Jas. C. Church, Dave H. Morris and two other members to be named by the chairman, Mr. Shattuck.

Automobile Club of California.

The Automobile Club of California has elected the following officers for the ensuing year: President, F. A. Hyde; vice-president, Dr. Frank J. Tillman; secretary, R. R. l'Hommedieu; treasurer, Byron Jackson; directors, C. C. Moore, A. E. Brooke Ridley, S. D. Rogers, W. H. Taylor, A. M. Hunt and Miles T. Baird.

To Amalgamate.

Steps are on foot to amalgamate the Massachusetts Automobile Club and the New England Automobile Club into one organization. Committees looking to this end have been appointed by the two clubs, that of the Massachusettes Club being composed of Messrs. L. E. Knott, secretary; Dr. Jos. Steadman and E. L. Rueger; while Mr. Geo. McQuesten, secretary, and Messrs. Lee and Howard represent the New England Club.

Bostwick's Mile Record.

Albert C. Bostwick established a mile record for this country on July 5th, at the track of the Gentlemen's Driving and Field Club, Long Branch, N. J. Driving his 40-HP. Winton racer, he rode three consecutive miles in the following times, viz.: 1:18¾, 1:16¾, 1:17.

League of American Automobilists.

The League of American Automobilists, with headquarters in New York city, has been incorporated. The object of this organization is to enable its members to use automobiles on the co-operative plan, each member having the use of a machine, say, once or twice a month, at a proportionate fraction of the total expense.

The directors are William Herbert Smith, William G. Kinney and William J. Howey, all of New York city.

Notes.

In connection with the Glasgow exhibition this fall, the Automobile Club of Great Britain will hold a 500 miles trial of reliability.

The St. Louis Automobile Club has been organized with the following officers: President, E. Volkening; vice-president, O. L. Halsey; secretary, John Ring.

F. W. Bolande was the first member of the Automobile Club of Bridgeport to receive a permit from the Secretary of State of New York to operate an automobile in that State.

The Automobile Club of Maine has been formed in Portland with twenty-five charter members. The officers are: President, Maynard D. Hanson; treasurer, Samuel S. Boyden; secretary, Henry M. Jones.

The Bloomsburg, Pa., Automobile Club has been organized with the following officers: President, J. M. Stover; vice-president, K. P. Wirt; treasurer, G. L. Low; secretary, C. W. Funston; directors, E. B. Tustin and M. I. Low.

In emulation of similar undertakings by the Automobile Club of Great Britain, the automobilists of Leicester, England, recently gave a demonstration run to the members of the Incorporated Association of Municipal and County Engineers on the occasion of their annual conference at that city. A large number of motorists turned out, and the run was well attended by a large number of guests.

There is a movement on foot among the storage and repair stations of New York city to establish a uniform rate of $30 a month for the stabling of automobiles.

Correspondence.

Space will be given on this page to letters concerning the Automobile, its operation or construction, to accounts of tours or runs, routes of travel, good roads, etc. When requested by correspondents their names will not be published, but must always be given in the communication to the Editor.

Chimney Covers on Steam Vehicles—Exchanging Experiences.

Editor THE AUTOMOBILE:

Some months ago I noticed in THE AUTOMOBILE mention of a sort of cover (something after the style of a cover for a stove pipe hole) which was placed one in each end of the cross draught pipe, thereby lessening the liability of burning back. I at once had these made of galvanized iron. They cost 15c. each. I found that when I traveled for any length of time in a constant relation to air currents I could, by closing or tilting these covers, materially aid the draught. More important to me, however, was the discovery that while under old conditions I could leave my carriage without fire for not more than 45 minutes at the most without re-firing, now, by simply pushing in these covers, so as to close tightly both ends of the chimney, the current of cold air that formerly circulated up through the burner and boiler was stopped. This retards, of course, the cooling of the boiler; and by this means I have left my carriage for an hour and fifteen minutes without resort to the torch.

I wish here to suggest that this plan of putting our experiences before each other will greatly aid us in the many little difficulties that must inevitably be encountered by all steam chauffeurs. It takes a little time to write these articles, but an exchange of woes will lighten the labor. With any one who will notify me of their most reasonable suppliers I will give similar addresses.

PAUL NORWOOD, M. D.

Ansonia, Conn., July 4.

An Automobile For The Hills.

Editor THE AUTOMOBILE:

I enclose a photograph of a four-passenger steam carriage which I have lately completed. It is arranged so that a removable front seat and footboard can be put in the place of the dash. Either side or center steering may be used, and the body is detachable on the road in ten minutes, thus giving ready access to the machinery. The engine develops six HP., and the boiler is good for eight. A crosshead pump and auxiliary hand pump are fitted, also an injector. The feed water is heated by the exhaust steam, which is then divided, part being used to give the draft and the rest going through a condenser. No steam is visible behind except on very cold days. The top of the water tank forms a special lid with a bucket attached for filling. This holds 3½ gallons, and when in place prevents splashing in the tank.

We have given this machine a number of tests, and yesterday we loaded four people, weighing altogether 612 pounds, and started on a 30-mile trip over the mountains. The road was very bad, muddy in some places, and stony in others, with steep ascents. We covered the distance in two hours thirteen minutes, making an average of almost 15 miles per hour. On one occasion we encountered and climbed a ledge of three rocks, rising 16 inches in 2½ feet. This shows what our power was. I should say the average steepness of the grades was about 18 per cent.

The auto was constructed entirely in my shop, even to the bell. We bought no parts

AN AUTOMOBILE FOR THE HILLS.

except the tires, which are Goodrich 3 by 30 inches. I should like to have some of the asphalt autos try the same route and see the kind of roads we have for pleasure driving. Do not think, however, that we have none better than I have described, for there are miles of good country roads.

Milton, Pa., June 28. C. E. Ritter.

Thinks the Cost Excessive.

Editor THE AUTOMOBILE:

Please give the reasons and object of Dr. Paul Norwood, of Ansonia, Conn., in giving (in your May issue) the prices and cost of running a steam carriage. Any figures like these would discourage any person from buying an automobile.

Medford, Ore., July 6. E. D. E.

[We have no idea that Dr. Norwood had any purpose other than to give facts which he believed to be typical and therefore useful to other users or prospective users of steam carriages. As readers of our issue of last February will remember, the repair account of a steam carriage may vary between very wide limits, contingent partly on the make of the carriage and partly on the usage it receives. Dr. Norwood's figures appear to include the burning out of a boiler, but otherwise, taking into consideration the fact that he uses the carriage in his practice and on country roads, we do not imagine that his expense account is materially greater than was to be expected. It will be noticed that the figures date from the purchase of the machine and average less at the end of the period than at the beginning.—Ed.]

Duryea Doesn't Agree.

Editor THE AUTOMOBILE:

On page 163 of your July number you make some remarks concerning wheel steering, but fail to qualify those remarks, which renders them incorrect and misleading. While there is no doubt about the value of a wheel steering on certain machines, the same condition exists regarding the lever steering. It has its advantages for certain purposes and its disadvantages for other purposes; for example, no cycle rider would use any steering excepting the handle bar (which is a lever steering), because this has been proven by years of use to be the easiest, surest, quickest, simplest and best steering for a bicycle. This same statement applies to a tricycle. Rack and pinion or similar modifications of the wheel steering have been used on tricycles, and the accepted form finally became the handle bar or lever steering. On traction engines the wheel steering is recognized as being the only proper form, and we may draw from these facts some correct conclusions as applied to motor vehicles. For a heavy machine, the wheel steering is undoubtedly a necessity, but for a light machine most makers are using levers, and are undoubtedly right in doing so. The lever is simpler, has less lost motion, is less in the way, can be operated quicker, and is superior in every respect to the wheel steering, provided the vehicle is light enough to permit the lever steering without undue physical effort. If, on the other hand, the vehicle is so heavy that the steering wheels cannot be moved a sufficient distance by a single swing of the lever without undue physical effort, then some mechanical device for multiplying the power, such as a wheel on a shaft operating a worm and gear, is necessary and therefore best. On this account statements as to the value of the two devices should always be qualified by the conditions under which they are to be used. We have demonstrated many times and can do so again that the lever steering is far superior to the wheel steering under all ordinary driving conditions met by a light vehicle. For example, with our light vehicles weighing less than 1,000 lbs., we go over all kinds of roads at any desired speed with perfect safety with a lever steering, and we can make sudden or short turns in close quarters with a rapidity not possible with a wheel steering. We drive over rocks 6 inches high, hands off; a feat not considered possible with a lever steering. We do this at speeds so high that when the rear wheel strikes the same obstacle the vehicle is bodily deflected from its course. This latter fact is unknown to many drivers, and is one of the disadvantages of a wheel steering as compared

with a lever. With a lever a sudden deflection due to skidding of the rear wheels or tossing of the vehicle may be corrected instantly, but with the wheel requires some time. This fact counteracts very largely the supposed safety gained by a wheel steering over a lever steering, particularly on light machines. With a light machine the lever steering is safe, and being much quicker than the wheel, is certainly more desirable. If the lever steering is used on a machine properly designed, no thought about safety is required. A six-year-old boy drives our phaetons over tolerably rough roads, and if much muscular effort were required this would not be possible. We accomplish this by having the steering heads properly placed and the front of the vehicle lightly loaded. A thorough trial will convince the most skeptical of the advantage of this arrangement, and we believe the lever steering will finally predominate on motor vehicles, just as the handle bar became the sole form on cycles. We regard the heavy motor vehicle as wholly unnecessary for pleasure purposes, and bound to give way to light forms readily handled by lever steering. CHAS. E. DURYEA.

Reading, Pa., July 24.

Tiller Steering and Straight Driving.

Editor THE AUTOMOBILE:

Since reading the editorial in your last issue, entitled "Wheel Steering Again," I have been disposed, as a user of the highways, to add some thoughts suggested by watching tiller steering of autos on the road.

I say on the road, for it may be necessary for newspaper delivery wagons and such wild users of our streets to squeeze through a jam of wagons, and then perhaps a "sensitive" steering tiller is convenient, but perhaps even then it may be as it is with the yachts racing for the America's cup—the wheel will bring a change of course with sufficient rapidity.

The commonest fault of all tiller-steered autos on a good road is wabbling; not the turn caused by carelessness of the man at the tiller or his choice of what he thinks the best part of the road—these are faults of a different kind and need different treatment—but real wabbling, such as seen for another reason but in an exaggerated form in the cyclist who has just gone on the road. I recall one auto recently which left a track, on a freshly sprinkled roadway, not less than half as wide again as the gauge of the wheels; this for half a mile and probably longer. It confirmed the complaint I have heard from some users of autos against a trolley line in the middle of the road, even though there be from fourteen to twenty feet on either side of the rails.

The effect of running an auto on ever so flat an arc of a circle instead of on a tangent line is to monopolize the road.

It does seem to me that the advocacy of "sensitive" steering of a four-wheeled vehicle is a mistake carried over from the use of bicycles, where sensitive steering is carried to the extreme merely to afford a few the opportunity to perform tricks on the road. But what can be used, and at times well used, on two wheels has nothing to do with four wheels. The two wheels can be swung around by the aid of the body in places where four wheels would merely slip and where the weight of the live freight can be of no use until two of the four wheels (and they on the same side) are off the ground.

Again, the first thing necessary in passing another vehicle is to know where that vehicle will be as you pass. If it is to come down on you as if about to run into you and then use a quick turn around you, you must know that long enough in advance not to interfere. This is the rule of the sea between sailing vessels and steam vessels. It is true the steam vessels can go where it pleases and the sailor must keep on or into the wind, but the result is the same; one must keep its course to allow the other to gyrate around the compass. Now there are enough admiralty suits arising out of mistakes of a few signals, without hoping to have any system of land signals that will compel the most stupid to obey.

I must confess that I am against all signals as a rule; to keep to the right and fight for your side of the road, as the cyclists have done, would remove the necessity for most steering, "sensitive" or otherwise.

I have met several very fast autos on the road, but although they seemed to be approaching with undue rapidity, I have not felt afraid of them, because the steering was as straight as a rule and the running on the right side of the road. I had, therefore, merely to keep to the right, and that was all the law gave me for it was all I needed. Only a few days ago, just after a very fast auto passed, along came one whose speed was not over fifteen miles an hour, if as much; that auto was all over the road and a nuisance for that reason.

So far as my observation goes "sensitive" steering and recklessness are likely to be found together; and when exhibited at the same time they do more to make autos unpopular than all the speed that can be gotten on an ordinary road.

John Bethell Uhle.
President The Highway Alliance.

New York, July 27.

Steam Carriage Prices Raised.

The Locomobile Company of America announces an advance in the price of standard locomobiles, from $50 to $100 over former prices on all machines except the surreys of styles Nos. 5 and 05. For example, the price of style No. 2, the standard spindle seat stanhope, is put at $850 instead of $750, while style No. 3, the panel back stanhope with buggy top, is $950 instead of $900.

Motorettes in Boston.

P. C. Lewis, 33 Stanhope St., Boston, the local agent for the De Dion motorettes, reports recent orders from the following persons in or near Boston: E. C. Byam, Dr. Geo. N. Cushman, C. W. Willey, W. H. Thayer and I. P. Smith, of Boston; P. W. Livermore and Austin Grey, of Harvard College; F. W. Russell, New Bedford, Mass.; F. L. Barrows, Middleboro, Mass.; W. J. Hoyt, Manchester, N. H.; C. N. Kimball, Winthrop, Mass.; Geo. L. Batcheldor, Marblehead, Mass.; H. F. Currier, Boston, Mass.

Wanamaker Opens an Auto Station.

A new automobile station and driving school has been opened by John Wanamaker at 138-140 East 57th St., New York City. The building is a commodious one, and facilities for storage and repairs are included. A full line of sundries is carried, and in connection with the establishment is a school of instruction, wherein any one, whether a purchaser or not, will be taught to operate the machine at reasonable charges, and the latter will be refunded on the purchase of a machine.

Improvements in the Locomobile.

The following changes and improvements have been made by the Locomobile Co. of America in its regular line of pleasure vehicles:

Running gear strengthened, larger tubing used.

Spur gear inclosed differential in place of open bevel gears, formerly used.

Feed water heating coil in muffler.

Cylinder lubricator made much larger.

Water tank carried up flush with top of body, giving increased capacity. Tanks now hold 27 and 32 gallons.

Hand valve allowing fire to be cut off from seat.

Burner head and sides now pressed in one piece.

Cross draft pipe shorter and larger.

The company is at work on a new touring model for severe duty. It will soon be on the market.

The Siegel-Cooper Co. of Chicago, contemplate the replacement of their horse delivery service by electric delivery. It is reported that about 150 of their present wagons will be fitted with electric propulsion on the Crowdus system, as exploited by the Crowdus Automobile Co. of Chicago.

Queen Alexandra has lately placed an order with the City & Suburban Electric Carriage Co., of London, for an electric victoria, which she intends to present to the Dowager Empress of Russia. The vehicle is a Mark XII. Columbia, and is similar in all respects to the carriage now owned by Her Majesty.

Notes.

Accompanied by Mr. Robert P. Hooper, of Baltimore, Mr. E. B. Gallaher, of Philadelphia, recently made a 180-mile trip from the latter city to Baltimore, through the Blue Ridge Mountains via Lancaster and Gettysburg. The trip was made to deliver a 12-HP. "Searchmont" carriage to Mr. Hooper's father, who is president of the Automobile Club of Maryland, and also to test the hill-climbing qualities of the machine.

After a protracted delay, the first of the public omnibuses with hub electric motors has been delivered in Chicago. These vehicles are built by the Westinghouse Electric & Mfg. Co. for the Hub Motor Co., which proposes eventually to supply motors and running gears to the trade. The principle of the system is the use of an electric motor inside of each of the wheel hubs, the field magnets of the motor being fixed to the wheel and the armature connected through a gear reduction so that it revolves much faster than the wheel.

THE CRESTMOBILE.

Desiring to assist so far as possible the New York to Buffalo endurance test, the Remington Automobile & Motor Co. announces that, although it is too busy to take part in the test, it will gladly place its resources at the disposal of any contestant who finds himself in trouble on his arrival in Utica.

The Oneida Automobile Co. has been organized in Oneida, N. Y., for the purpose of dealing in automobiles. The officers are as follows: President, Theodore Coles; vice-president, H. M. Reynolds; secretary and treasurer, S. Allen Clark.

The Newport, R. I., agency for the De Dion-Bouton Motorette Co. has been taken by Kenneth A. Skinner, who has been long identified with the automobile trade and with automobile racing, both in this country and abroad. Mr. Skinner's present location is at the Electric Vehicle Company's quarters on Bellevue Ave., where a full line of motorettes is on exhibition.

The Crestmobile.

The Crest Mfg. Co., Cambridgeport, Mass., has lately brought out a gasoline runabout propelled by a 3½-HP. Crest air-cooled motor. The motor is carried on the front axle, where it is exposed to the air as much as possible, and from the motor shaft a chain run back to the speed changing gears on the underframe, another chain driving the axle. The gasoline tank, which is beneath the seat, is stated to contain gasoline for a 60-mile run. The weight is given as a little over 400 lbs.

The Empire Transmission Gear Practically Applied.

The illustration herewith shows a bottom view of a vehicle fitted with the Empire gearless transmission, built by the Buffalo Gasoline Motor Co. and described in these columns last month. The transmission is by chain to a countershaft, and from this by single reduction spur-gears to the rear hubs.

New Prices on Orient Goods.

The Waltham Mfg. Co., Waltham, Mass., announces that instead of waiting till New Year's to introduce their 1902 scale of prices, they intend to stimulate the fall trade, ordinarily the dullest of the year, by putting them in force at once. They will be as follows:

Orient Motor Bicycle, with 2¼-HP. Aster or De Dion Motor, $250.00.
Motor Quadricycle, convertible into a tricycle, fitted with 2¾ Aster Motor, $375.00.
Runabout, fitted with 5-HP. Motor, $850.00.
Victoriette, fitted with 5-HP. Motor, $1,200.00.
These prices will continue in force until August 1, 1902.

Business News.

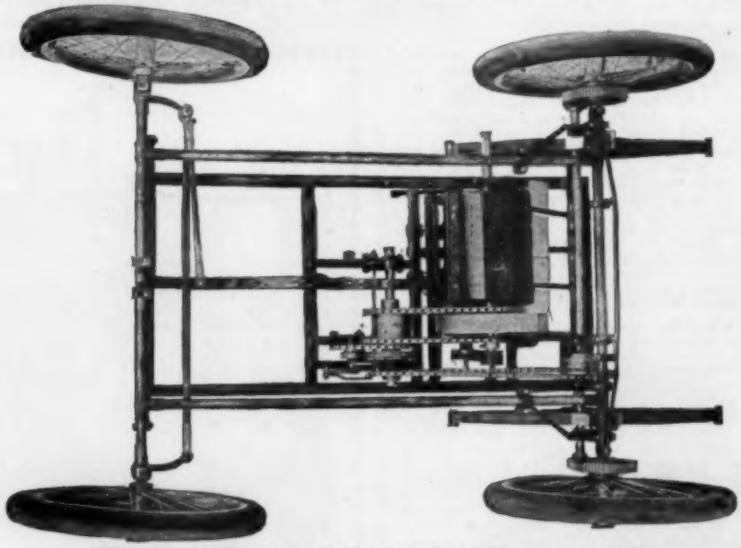
The Toledo Automobile Co. has changed its name to the Toledo Motor Carriage Co.

The Knox Automobile Co. has been incorporated in Massachusetts with a capital of $60,000.

The Century Motor Vehicle Co., Syracuse, N. Y., has increased its capital stock from $30,000 to $100,000.

The American Bicycle Co. will conduct the manufacture of the Sperry batteries separately from the rest of its automobile business, under the name of the National Battery Co.

The Passaic Automobile Transportation Co. has been organized with a capital stock of $50,000. It proposes to operate public passenger automobiles in Passaic, charging a 10-cent fare.



THE EMPIRE TRANSMISSION GEAR PRACTICALLY APPLIED.

The Conrad Motor Carriage Co. is now fully installed in its new factory at 1417 Niagara St., Buffalo, N. Y. With their increased facilities, their capacity is now more than doubled. Among the new styles is a steam dos-a-dos.

AT

Bargain Prices.

Just to make room for our next motocycle model, the **Orient Motor Tricycles** now in stock, always priced at **$450**, are to be sold, while they last, below even the prices of their imitators.

Orient Tricycles with 2¼ De Dion Motors, **$310**

Orient Tricycles with 2¼ Aster Motors, **$325**

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This is a passing opportunity that will not come again. Grasp it—you can make no motor mistake in buying under the name "Orient."

Waltham Mfg. Co.

Orient Bicycles
Orient Motocycles
Orient Automobiles

Waltham, Mass.

A new catalogue has been issued by the Overman Automobile Co., 81 Fulton St., New York, describing the well-known features of the Victor steam carriage. Numerous half-tones show detail views of the boiler, burner, engine and the automatic regulators for the steam, air, and burner.

The Scott Automobile Co., 3927-3939 Olive St., St. Louis, issues a preliminary catalogue describing its running gears, electric motors, controllers, batteries and complete electric vehicles. The Scott Automobile Co. has recently absorbed the Scott & Cooper Mfg. Co. and the St. Louis Automobile & Supply Co.

Grout Bros., Orange, Mass., report the addition of a top stanhope to their line of exhibits at the Pan-American Exposition. This vehicle has several features not on the regular model, such as water column, feed-water heater, etc. A light delivery wagon with the same improvements has been added also.

Branch storage and repair stations will shortly be established by the Harvard Auto Corporation of Boston in the following towns adjacent to that city: Amesbury, Brockton, Fitchburg, Gloucester, Haverhill, Lowell, Lawrence, Lynn, Marlboro, Nashua, Newton, Pawtucket, Portsmouth, Plymouth, Quincy, Salem, Worcester, Winchester and Woonsocket, R. I.

Through an oversight the name of the Overman Automobile Co., 81 Fulton St., New York, was omitted last month from the list of automobile exhibitors at the Pan-American Exposition. This company shows one of their new model stanhopes, illustrated last month, and also a similar machine dismantled for inspection of the mechanism.

The New Jersey Motor Carriage Co. has been organized with a capital of $30,000. It has opened an automobile storage and repair establishment in Plainfield, N. J., near the old railroad station. They are agents for Locomobiles, Waverley and Columbia electrics, and Orient gasoline runabouts. In addition to a complete electric charging plant, there is a large air compressor which delivers air at 150 pounds pressure for all purposes.

Under the title "Industrial Opportunities," the Industrial Department of the Lackawanna R. R. has just issued a 300-page booklet, which gives in small compass, for every town along its line, particulars regarding the population, distance from New York and from Buffalo, railroad facilities, leading industries, shipments, rate of taxation, cost of labor, average rent, lighting and water-works, if any, value of land, and special inducements in the way of factory sites. To any manufacturer looking for a location this pamphlet should be of much interest. It may be obtained on application to the Industrial Department, D. L. & W. R. R., 26 Exchange Place, New York.

The Searchmont Motor Company is at the present constructing three new machines for the New York-Buffalo run, September 9th to 14th. These machines are practically the same as their standard 12-HP. vehicles as far as the motive power is concerned, but their tank capacity, lubricating facilities, etc., are greatly increased in order to allow them to travel the roughest kinds of roads without either replenishing water or gasoline for twelve hours. Owing to the system of a duplicate production under which the Searchmont vehicles are manufactured, it will be practicable to carry duplicates of all important working parts in the tool chest, which is expected to shorten very greatly the time spent in delays en route.

Patents.

List of Automobile patents granted during month of July.

677,305—Carbureter. Issued to I. R. B. Arnold.
677,068—Vehicle running gear. Issued to W. F. Dodge.
677,709—Automatic tank pump for automobiles. Issued to G. B. Stacy.
677,771—Means for connecting differential gearing to driving axles of vehicles. Issued to E. T. Birdsall.
677,852—Carbureter. Issued to Brown & Connelly.
678,194—Carbureter. Issued to C. K. Pickles.
678,144—Carriage steering mechanism. Issued to R. W. Thompson.
677,897—Motor vehicle driving mechanism. Issued to L. B. Smyser.
677,968—Compensating vehicle gear. Issued to C. T. Fletcher.
677,854—Motor vehicle. Issued to Canda & Smyser.
678,063—Motor vehicle. Issued to R. Thayer.
677,875—Engine protector for motor vehicles Issued to G. A. Macker.
678,520—Automobile. Issued to L. C. Savale.
678,493—Carbureter. Issued to R. Jackson.
678,622—Motor vehicle driving mechanism. Issued to Jeffery & Thompson.
679,024—Autocar starting means. Issued to Hopp & Buckley.
679,019—Carbureter. Issued to G. Fischer.
679,018—Carbureter oil feed. Issued to G. Fisher.
678,963—Motor cycle. Issued to G. W. Manson.
679,045—Motor vehicle. Issued to A. & J. B. Benson.
679,097—Motor vehicle reversing mechanism. Issued to W. Van Wagoner.
679,135—Vehicle running gear. Issued to J. E. York.
679,000—Vehicle wheel having resilient tire. Issued to M. Holanbeck.

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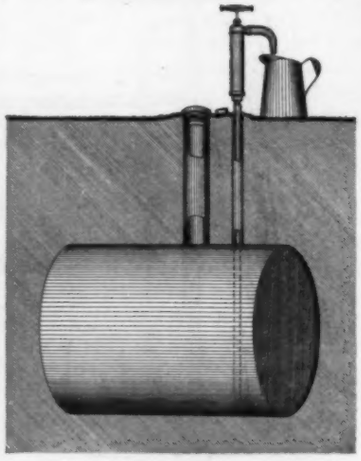

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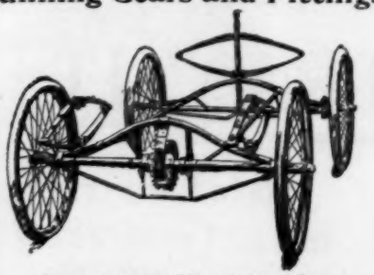

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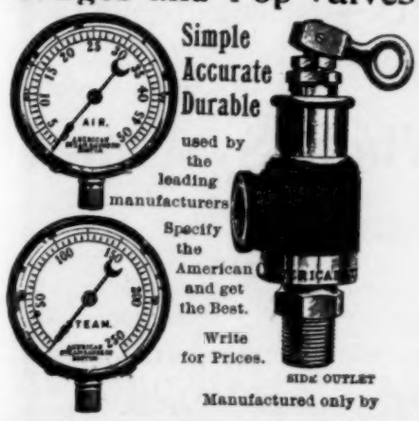

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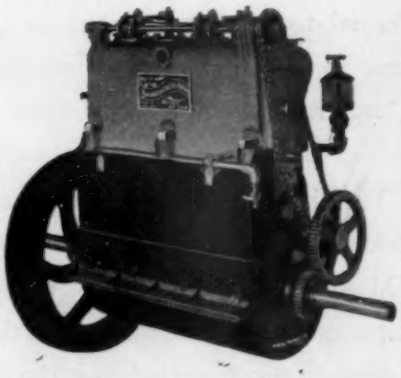

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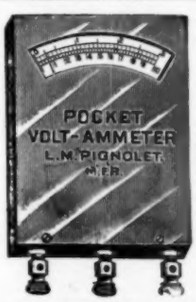

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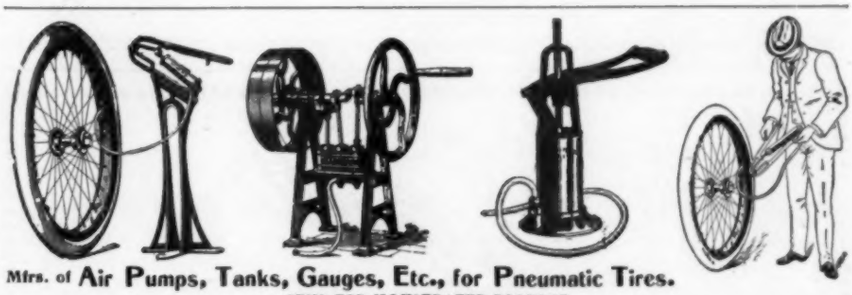

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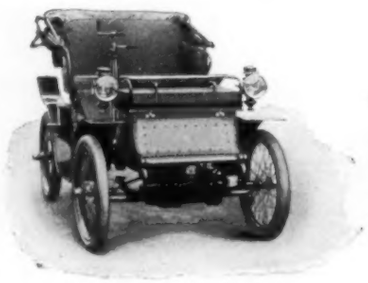

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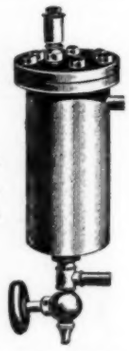

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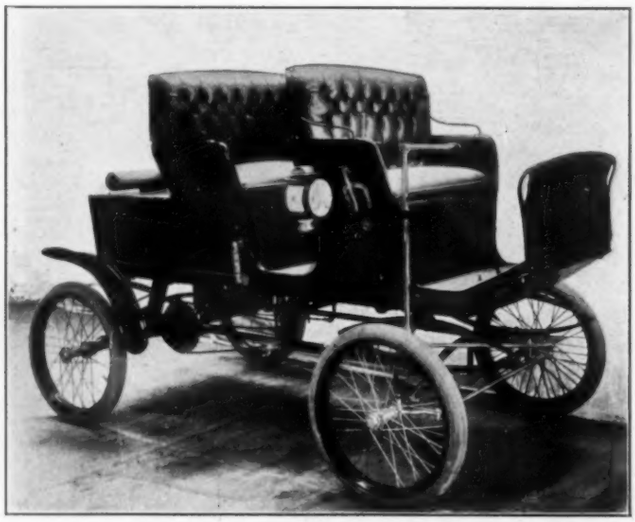

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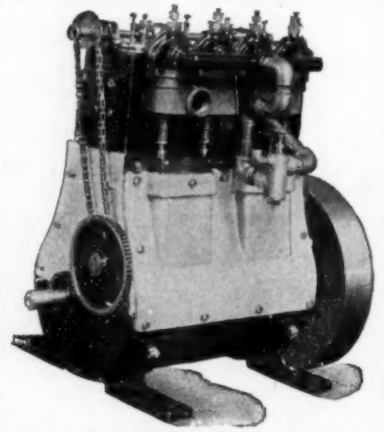

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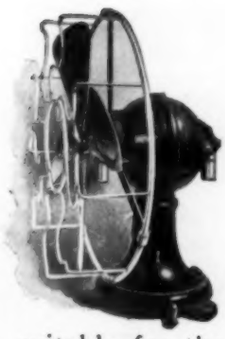

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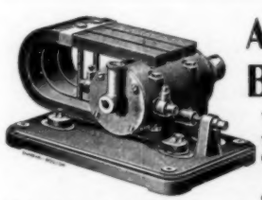

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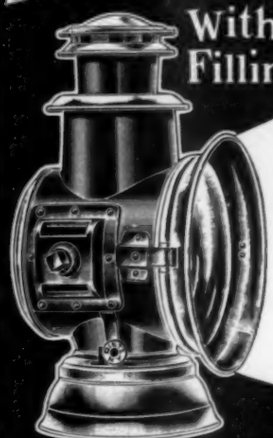

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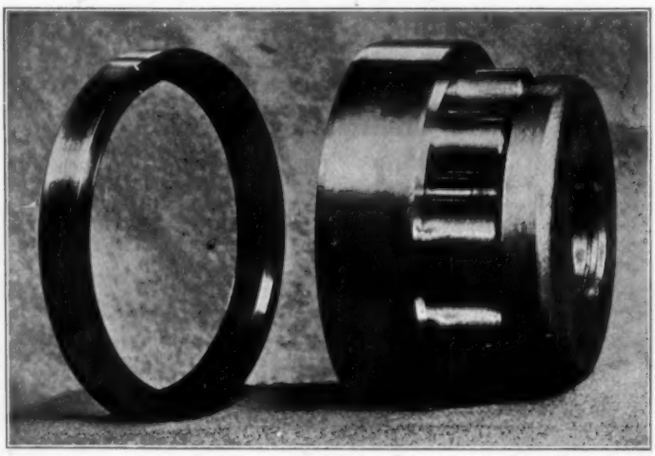

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